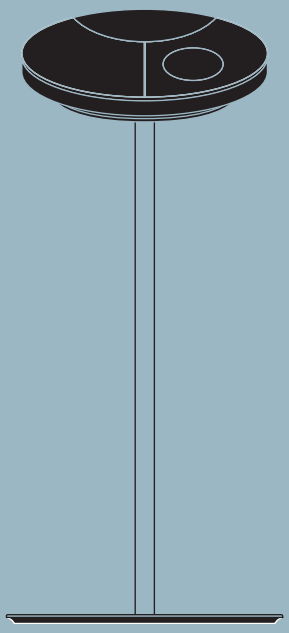
BeoCenter 2

Type: 2801, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823

Service Center repair guide
English, German, French, Italian, Spanish, Danish, Nederlands, Japanese



BANG & OLUFSEN

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There is no Brief operation guide in this Service Center repair guide.
Instead an english version of the user guide is enclosed the back-up suitcase.

How to service

Front line service

Both the Master and the Socket Unit has been developed for simple module exchange to follow the On-site service strategy. Module exchange is possible On-site, at the dealer or in the service workshop whatever is most convenient in each case. For On-site service a Back-up suitcase must be used.
Module exchange is the recommended way to perform service, due to the fact that most of the modules are multi layer based, and most of the circuits are on a single main PCB.

An electrical fault symptom can be removed during one visit to the customers home if you bring a BeoCenter 2 Back-up suitcase with you.
Is it a mechanical symptom, the particular part must be brought with you separately.

The Socket Unit and the Master Unit must be connected when testing, because the Socket Unit contains the power supply.

Service documentation

Service Documentation for the BeoCenter 2 will be a "Service Center repair guide" with part nr. for the Back Up suitcase, electrical and mechanical parts, User's guides etc.

Converting mains voltage supply

The Master Unit has only one variant for all markets.
The Socket Unit has separate type nos. for each market, due to country approvals. The mains voltage is determined by the type nos. of the Socket Unit, there are only two internal mains voltage settings (a jumper) on the SMPS, 100/120V and 230/240V AC. (J10, when mounted = 100/120V)

Use the ServiceTool to reprogramme the DVD region code and tuner setup.

The only variant on the Master Unit : 2801

The variants on the Socket Unit :

Variant	Area	Region
2811 :	EU2	DVD region 2
2812 :	EU3	DVD region 3
2813 :	EU4	DVD region 3
2814 :	EU5	DVD region 4
2815 :	GB2	DVD region 2
2816 :	GB3	DVD region 3
2817 :	US4	DVD region 1
2818 :	US4	DVD region 4
2819 :	JP2	DVD region 2
2820 :	AU4	DVD region 4
2821 :	TW3	DVD region 3
2822 :	KR3	DVD region 3
2823 :	LA4	DVD region 4

DVD Region setup

First time the Master Unit is connected to the Socket Unit, and powered, the DVD region code is set, and stored.

PIN code protection

The PIN code protection is a 4 digit PIN code, of the users own choice, which must be entered if the product has been disconnected from the mains for 15-30 min. The PIN code protection is activated from the factory, it is up to the user to deactivate it, or personalize the 4 digits code. If the PIN code protection is activated, when delivered into service it is a good idea to ask the customer to deactivate the protection.

Service code

If the PIN code protection is activated and the product is in a service situation, there is a possibility of 12 hours service by entering a 5 digit Service Master Code which is 11111. This gives 12 hours of full functionality to service the product. If two hours are used the first time, there will be 10 hours remaining.

Entering the code :
The service code must be entered when a source is selected and the product asks for the PIN-code "PIN _ _ _ _".
Press ◀◀ for 3 times to open for Master code input.
Type in the Service code.

Warnings

ESD

When electrical replacements or disassembly is taking place, use a ESD-mat. The internal electronic are very sensitive to static electricity.

When mains voltage on the BeoCenter 2 is required, remove the connection from the BeoCenter 2 to the ESD mat.

Laser exposure

The BeoCenter 2 contains a laser system and is classified as a class 1 laser product. The BeoCenter 2 must only be opened by qualified personal only.

General Warnings

Wear cutton cloves to avoid any fingerprints on the product.

The aluminium and display surface on the product is very sensitive, so handling should be done with great care to avoid damage. When transporting the BeoCenter 2 it is recommended to use the product cover, part no. 3375021.

The interface cable is very sensitive to sharp bends and other large mechanical influence. Also be sure that the plugs in each end, are connected correctly.

Cleaning

Clean the BeoCenter 2 surfaces using a lint-free cloth which you have wrung firmly in lukewarm water.

Never use alcohol or other solvents to clean any parts of the BeoCenter 2.

Specifications

Master Unit	
Dimensions W x H x D, Master unit	372 x 50 x 243 mm (without standard feet)
	37 x 15 x 23 cm (with standard feet)
Weight, Master unit	4.5 kg
Cabinet finish, Master unit	Silver
DVD/CD Disc sizes	12 cm and 8 cm (in adaptor)
IR-remote control	Beo 4
Close-up operation panels	Sensi-touch piezo-electrical keyboards
Display type	Vacuum Fluorescent Display with automatic light intensity control
Loader	Motorized doors and loader
Contains	DVD, DVD-loader, Display, Keyboard

Socket Unit	
Dimensions W x H x D, Socket unit	536 x 150 x 55 mm (without wall bracket)
	54 x 15 x 6.5 cm (with wall bracket)
Weight, Socket unit	2.8 kg
Cabinet finish, Socket unit	Black
Power supply, EU, GB, US, KOR	187 - 264 V / 50-60 Hz
Power supply, JPN, US, TWN	85 - 132 V / 50-60 Hz
Power consumption	typ. 22 watts / st-by < 2 watts
Contains	Radio, sound processing, video switching, power supply, main microprocessor

Audio Performance	
CD naming	200 discs can be named
Sampling frequencies	44.1, 48, 96 kHz
D/A Conversion	Sigma-Delta type
Frequency range	20Hz - 20kHz CD/DVD/AUX, 30Hz - 15kHz Radio, FM
Playback the following:	DVD-Video, Video CD, CD-DA, CD-R, CD-RW, CD-MP3
Signal-to-noise-ratio	≥ 105dB, A weighted, in CD mode
Tone controls	Bass, Treble, Loudness, Balance
Radio, FM	87.5 - 108.0 MHz, 76 - 90 MHz JPN, De-emphasis 50/75µs, Grid 12.5 kHz to 50kHz
Radio, AM	150 - 1710 kHz in two bands, Grid 225, 250, 300, 450 or 500 Hz
RDS	Name, RadioText, Clock
Naming	60 stations
Digital output	Stereo and Encoded surround sound
	Linear PCM, AC-3, MPEG-2, DTS

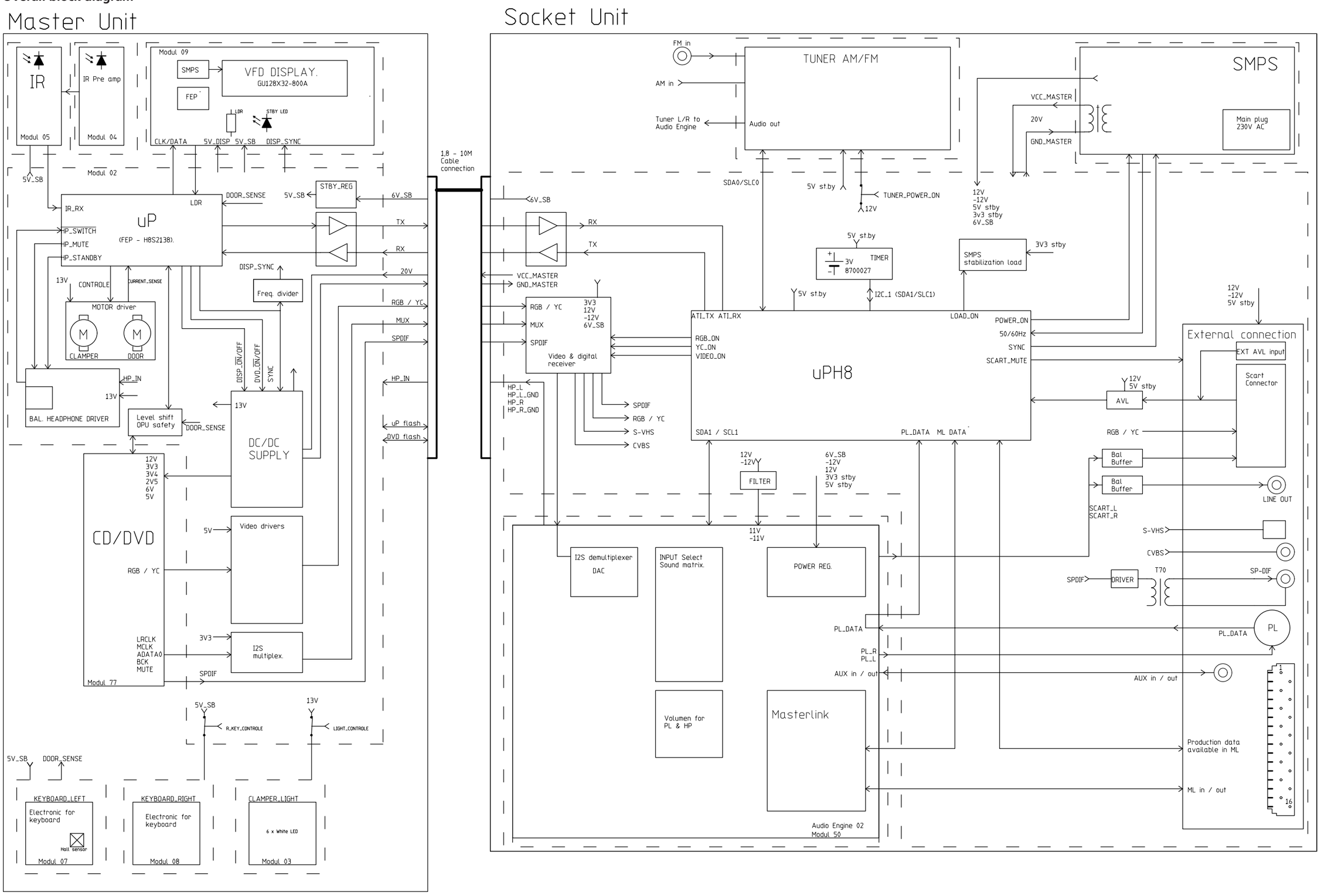
Video Performance	
Formats	RGB, S-Video (Y/C), CVBS (Composite video)
DVD Zone	According to Region
Colour system	PAL/NTSC depends on region setting
Signal/Noise ratio	> 60 dB, typ 70 dB
Crosstalk (video/video)	< - 55 dB
Diff. Phase	< 3°
Bandwidth	≥ 4.8MHz PAL, ≥ 4.3MHz NTSC
Widescreen Signaling	Data to signal the aspect ratio.
Analog copy protection	According to DVD standard dependant upon disc copy protection ON/OFF bit (DVD discs only)

Connections

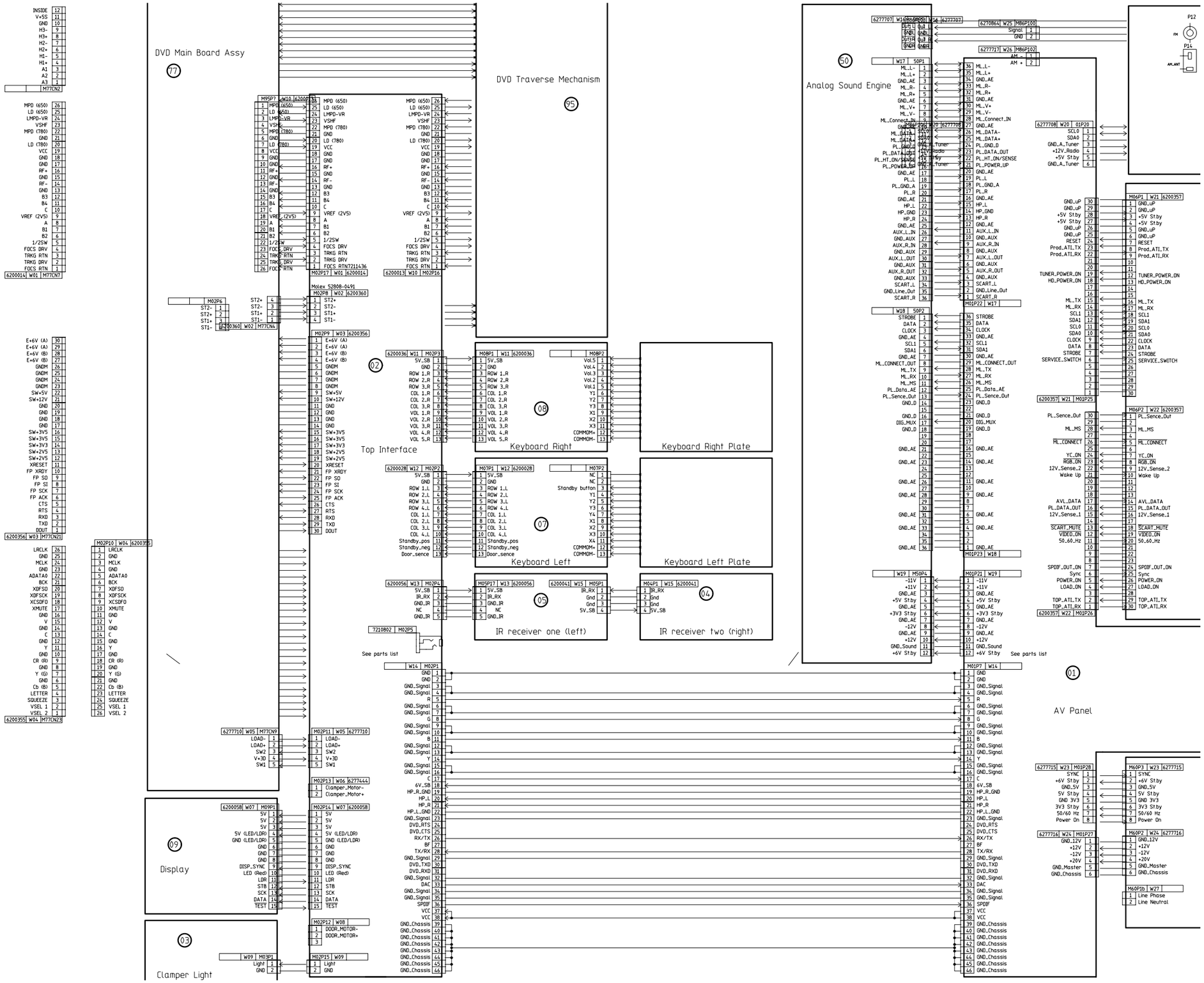
Master unit	
Headphone / Mini-jack	1 Special interface cable between Master and Socket unit
	1 special interface cable between Master and Socket Unit

Socket Unit	
AV (Scart)	1 AV Link 21-pin socket, CVBS, Y/C, RGB selectable output
S-video (Y/C output)	1 Mini DIN, 4-p
Control (CTRL)	1 mini-jack
Video (CVBS output)	1 Phono socket, yellow
Audio Line out	2 Phono socket, L/R
Audio AUX	4 Phono socket, inputL/R / output L/R
Digital output	1 Phono socket, orange
Master Link	1
Power link	1
FM antenna, 75 ohm	1
AM antenna(dedicated)	1
Mains connector	1
Master Unit	1 special interface cable between Master and Socket Unit

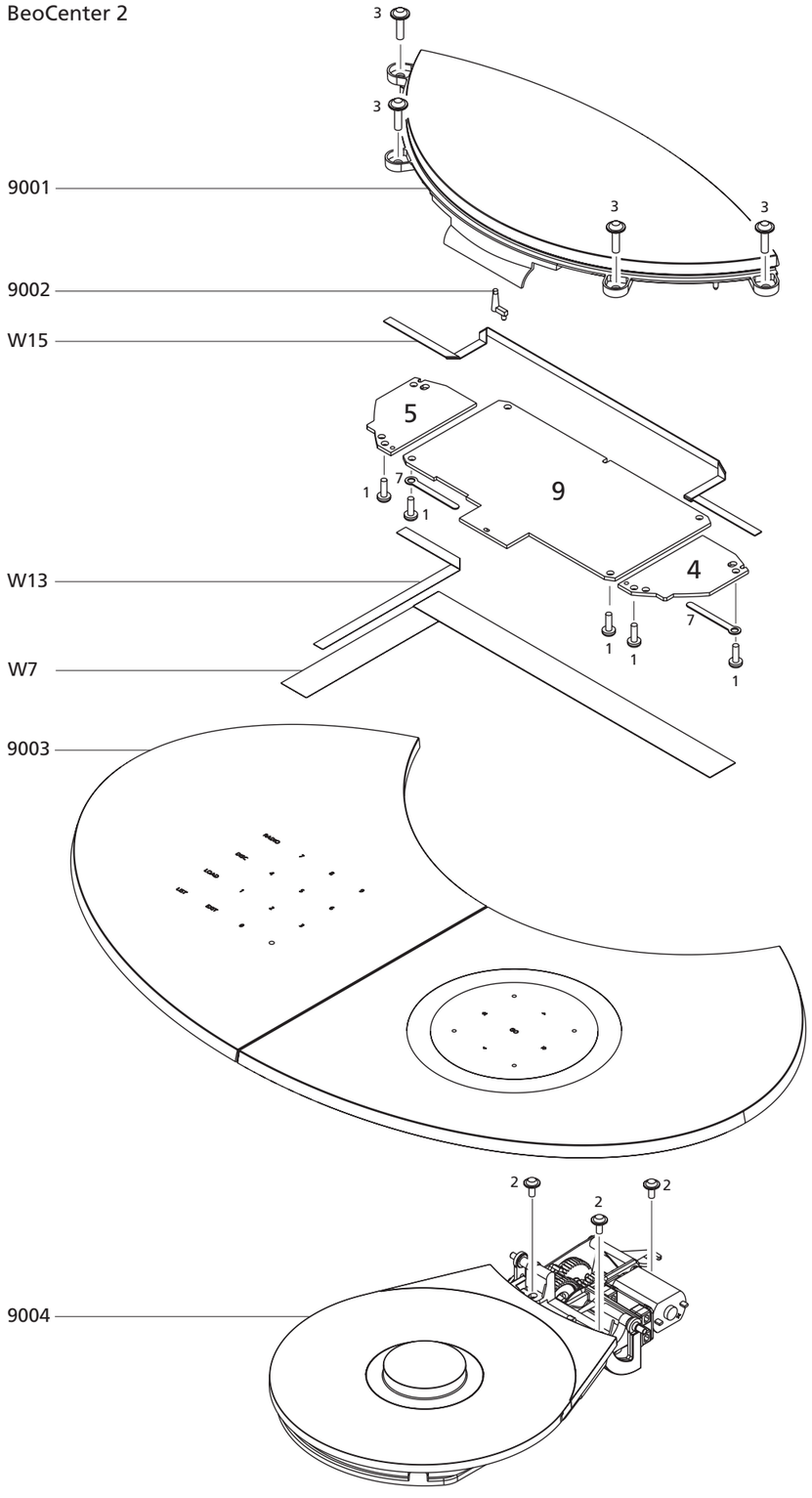
Overall block diagram

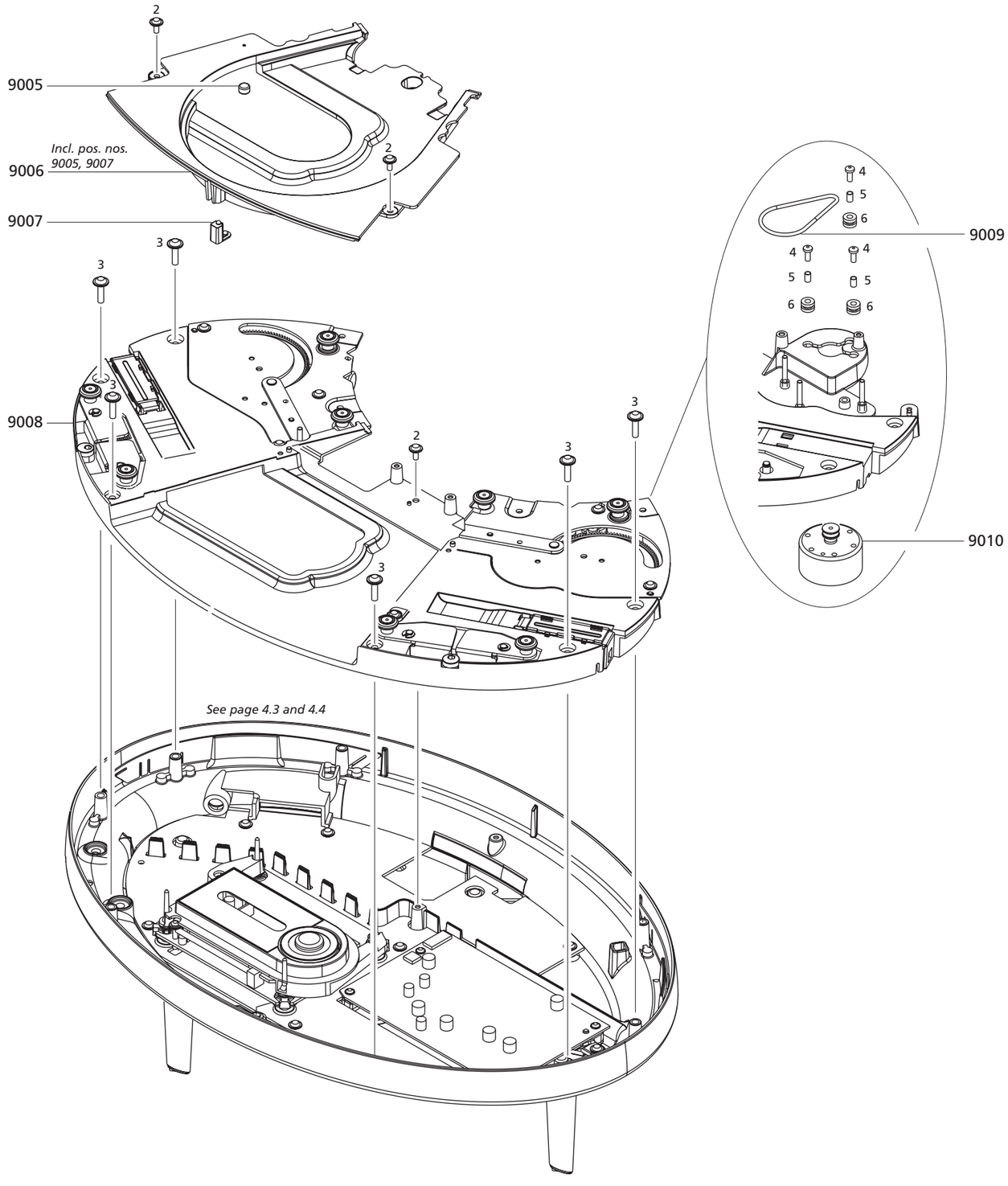


Wiring diagram



Available parts
BeoCenter 2





BeoCenter 2

9001	3322000	Display
9002	3375420	Light guide
9003	2776084	Keyboard left + right
9004	3320165	Clamper, complete
	2732142	Belt
	8400005	Motor
9005	3356077	Magnet
9006	3162044	Cover incl. pos. nos. 9005, 9007
9007	3907074	Rubber part f/cover
9008	3114035	Gearbox, complete
9009	2732004	Belt
9010	8400009	Motor

W7	6200058	Cable f/Display
W13	6200056	Cable f/Display
W15	6200041	Cable f/PCB4 - PCB5

PCB4	8000083	IR receiver two (right)

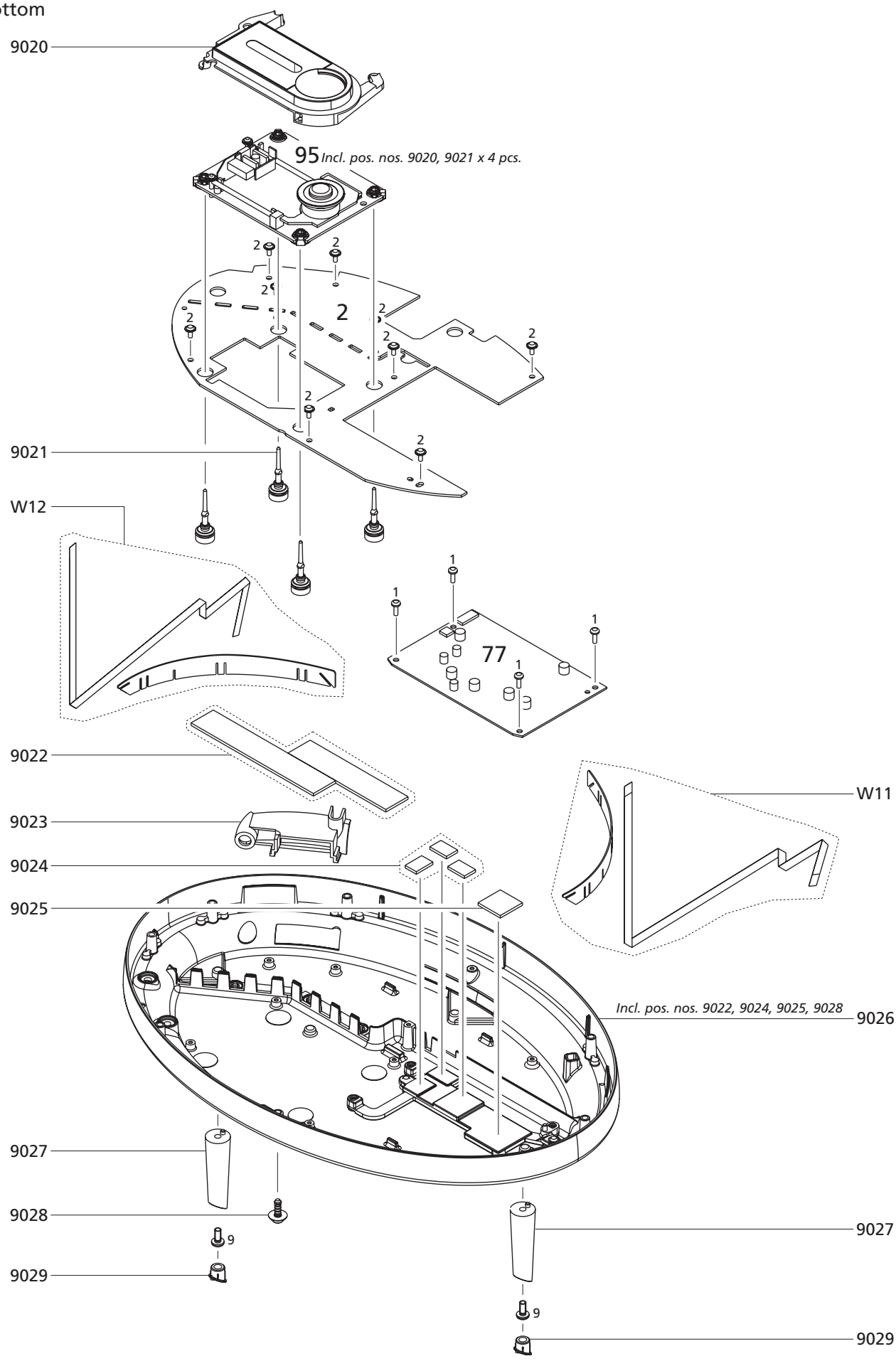
PCB5	8000082	IR receiver one (left)

PCB9	8330021	Display

Survey of screws etc.

1	2011048	Screw 2.5 x 8mm
2	2019033	Screw 2.5 x 6mm
3	2019034	Screw 3 x 12mm
4	2036061	Screw 2.6 x 6.5mm
5	2930074	Bushing
6	2938356	Bushing
7	7530119	Solder pad

Bottom


9020
95 Incl. pos. nos. 9020, 9021 x 4 pcs.
2
9021
W12
77
1
9022
9023
9024
9025
W11
Incl. pos. nos. 9022, 9024, 9025, 9028
9026
9027
9028
9
9029
9027
9
9029

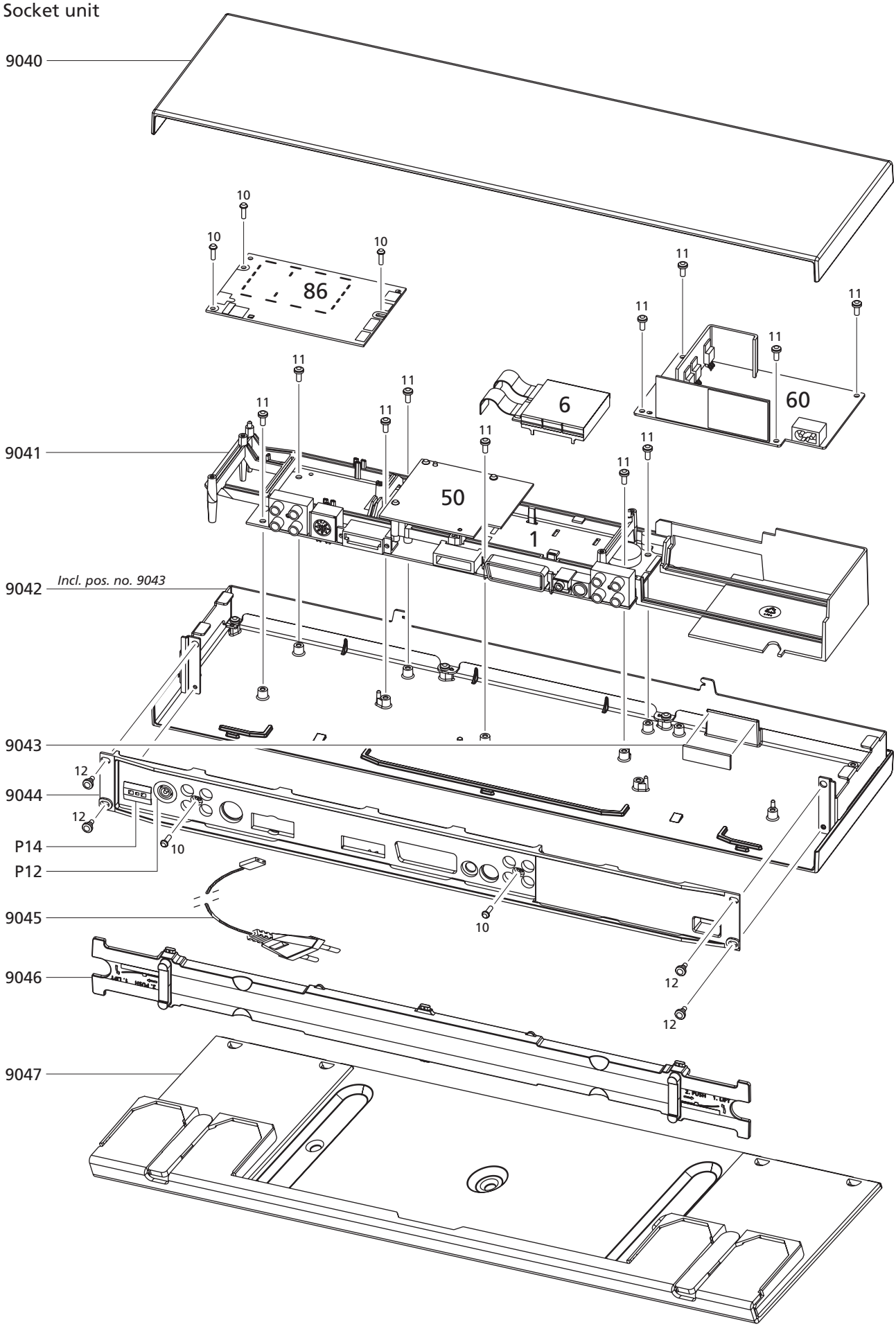
Bottom

9020	3320157	Cover f/CD
9021	2938375	Rubber bushing
9022	3947022	Tape f/bottom
9023	3169013	Cover f/socket
9024	3170067	Thermal conductive rubber
9025	2622011	Thermal conductive rubber
9026	3114031	Bottom incl. pos. nos. 9022, 9024, 9025, 9028
9027	3103013	Aluminium foot
9028	3103000	Rubber foot, small
9029	3103001	Rubber foot, large
W11	6200036	Cable w/holder, right
W12	6200028	Cable w/holder, left
PCB2	8000098	Top Interface
PCB77	8000164	DVD Main Board Assy
PCB95	8420004	DVD Traverse Mechanism incl. pos. nos. 9020, 9021 x 4 pcs.

Survey of screws

1	2011048	Screw 2.5 x 8mm
2	2019033	Screw 2.5 x 6mm
9	2042000	Screw 4 x 3.5mm

Socket unit


9040
9041
9042
Incl. pos. no. 9043
9043
9044
P14
P12
9045
9046
9047
10
11
12
86
6
60
50
1

Socket unit

9040	3114045	Top f/socket unit
9041	8052029	Socket chassis (PCB1, PCB6, PCB50)
9042	3114048	Bottom incl. pos. nos. 9043
9043	3170342	Insulation piece
9044	3950000	Cover f/sockets
9045	6100245	Mains cable, EU
	6100328	Mains cable, GB
	6100306	Mains cable, US
	6100247	Mains cable, JPN
	6100248	Mains cable, AUS
	6100386	Mains cable, KOR
9046	3165041	Cover f/bottom
9047	3031047	Wall bracket
P12	6270864	FM plug w/cable
P14	6277717	AM plug w/cable
PCB6	8000138	Microprocessor H8
	8344323	SW
	8343712	EEPROM
PCB60	8000099	SMPS
PCB86	8000115	Tuner - EU
	8000116	Tuner - JPN

Survey of screws

10	2052011	Screw 3 x 10mm
11	2015183	Screw 3.5 x 8mm
12	2930021	Screw 3 x 8mm

Packing

BeoCenter 2

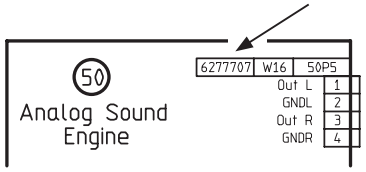
3396212	Set of foam
3917224	Foam foil
3392793	Outer carton

Socket unit

3396217	Set of foam
3917224	Foam foil
3392795	Outer carton

Wire bundles

See wiring diagram page 3.2.
The part no. is printed on the diagram above the wire bundle, as shown.



Connection cables W14

6270086	Connection cable, 1.8m - EU
6270087	Connection cable, 3m - EU
6270088	Connection cable, 5m - EU
6270089	Connection cable, 10m - EU
6270090	Connection cable, 1.8m - US
6270091	Connection cable, 3m - US
6270092	Connection cable, 5m - US
6270093	Connection cable, 10m - US

Parts not shown

3375021	Product cover
3395090	Back-up suitcase
3629000	Screwdriver TX6
3629002	Screwdriver TX8
3375055	Flash kit

ServiceTool

3658949	ServiceTool CD-ROM
3375397	Cable kit for ServiceTool, complete
	Cable kit consists of:
6270857	Main cable
6270852	Cable D-SUB-Jack
6277439	Wire, 3 pole
8008922	Minijack f/STB-Controller

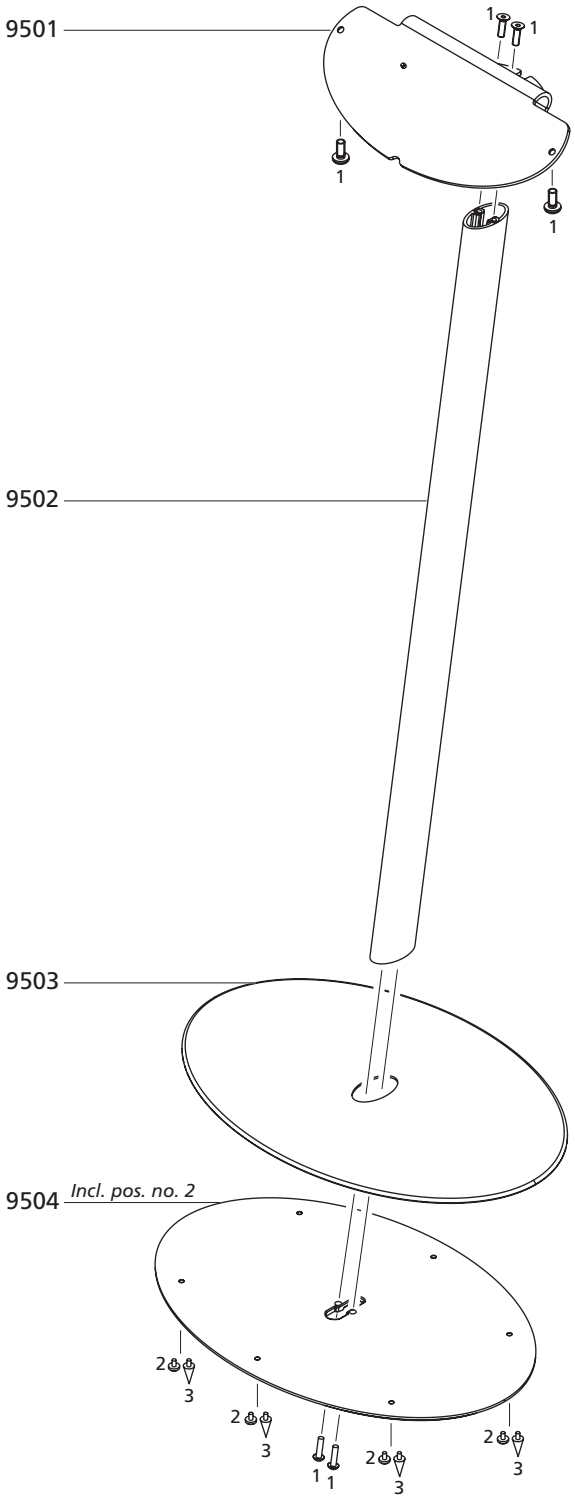
Available documentation

3538001	Service Center repair guide English, German, French, Italian, Spanish, Danish, Nederlands, Japaneese
	Guides for BeoCenter 2 and Socket Unit, please see Retail Ordering System

Accessories

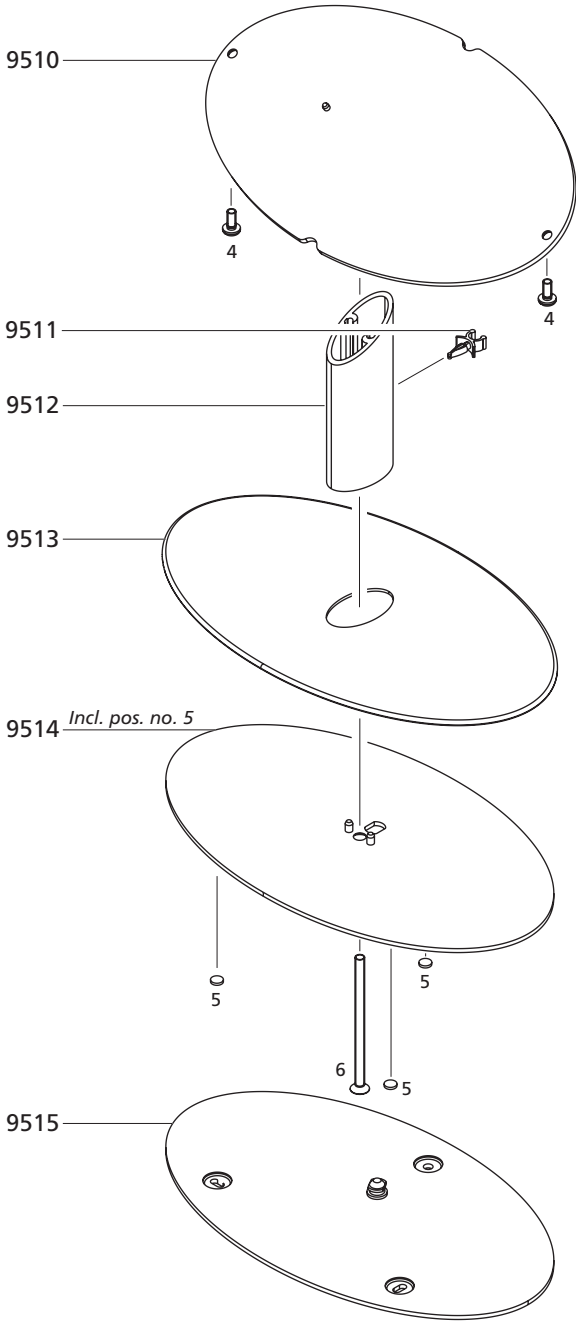
8720063	FM dipol antenna
8720047	AM loop antenna

Floor stand 2170



9501	3459446	Top plate
9502	2950033	Tube
9503	3459002	Cover
9504	2752023	Bottom incl pos. no. 2
1	3390667	Bag w/3 x 2 screws, 2 x hexagon spanners, 6 x spikes pos. no. 3
2	3103392	Foot
3	3103390	Spike
	3396234	Foam - order 2 pcs.
	3392824	Outer carton
	3504728	Guide

Stand/Wall bracket 2171



9510	3459448	Top plate
9511	3034400	Cable holder
9512	2950034	Tube
9513	3459447	Cover
9514	2752029	Bottom incl. pos. no. 5
9515	3459449	Wall plate
4	3390626	Bag w/2 x screws, 2 x hexagon spanners
5	3103358	Foot
6	2058016	Screw 6 x 100mm
	3396235	Foam - order 2 pcs.
	3392825	Outer carton
	3504729	Guide

Service tips

Doing fault searching and measurements, there is some special features you should be aware of.

1. In order to power up, the Master Unit and Socket Unit needs to be connected thru the interface cable, do to the main SMPS is placed in the Socket Unit, along with the RGB Video processor and microprocessor.

2. Right before signals from the Master Unit and Socket Unit goes into the interface cable, they are converted into current signals. If you need to measure the signals going in and out the interface cable, you need to measure before or after the converters.

3. All SMPS´s in the Master Unit is synchronized along with the SMPS´s in the Socket Unit. But the main SMPS in the Socket Unit is only synchronized, along with the rest, when the BeoCenter 2 is receiving AM signal in RADIO mode. If the synchronizing isn't working, it can create a lot of noise in the AM reception.

4. The DVD/CD are not able to start up when the keyboards are open or dismantled, doing to exposure of the laser pickup. A little magnet should be used to activate the hall sensor. Disconnect the BeoCenter 2 from the mains, place the magnet and then connect the BeoCenter 2 to the mains again. After start up, the magnet can be removed, and the hall sensor will still detect the keyboards as closed, which give full functionality with the keyboards open/detached, until load is pressed.

   See page : 6.17

5. If measurements need to be done on the outlet plugs on the Socket Panel, remember to use the GND in the same plug you are about to measure in. The GND level can vary from plug to plug.

6. All data communication to the DVD interface is done with signal levels on 3.3 volts, if this level vary, it can cause data failure.

7. The VFD display has an auto contrast function, if this fail, the light in the display can vary from very bright to almost black.

8. The interface cable between the Master Unit and the Socket Unit is very sensitive to sharp bends or any other large mechanical influence. Damage can result in poor sound/picture quality or fault in the data communication between the Master Unit and Socket Unit.

9. If one of the two IR-modules fails, the IR sensitivity will be reduced.

10. All analogue audio processing is done in the analogue Audio engine (module 50). The digital SPDIF signal is not going through any processing, beside it is DC levelled on module 01.

Service Menu

There are two ways to enter the service menu, either by the keyboard or the BEO4 remote.

Keyboard : With the BC2 turned on, press "list" then press ⏩ and within 3 sec. Press **0 0 GO**

BEO4 remote : With the BC2 turned on, press "menu" then press ⏩ and within 3 sec. Press **0 0 GO**

Note you have entered the service menu, and have the following options :

```
.. Service Menu
1  SW Versions…
2  Error List…
3  Product ID…
4  Service Counters…
5  Default Settings
6  Keyboard Test…
7  Loader Lock
8  DVD Service
```

Select wanted menu using general menu navigation rules.

1. SW Versions

```
...SW Versions
1  AP              0.90a
2  OS             12.00a
3  IOP            22.00a
4  Tuner           1.10a
5  Master Unit     0.81a
```

2. Error List

Select from the list NVMEM errors or VMEM errors

```
...Error List
1  NVMEM
2  VMEM
```

The NVMEM and the VMEM menu has the same layout, each menu will display the last 15 errors. 1 is NVMEM (non volatile memory) and 2 is VMEM (volatile memory). The errors in NVMEM are stored permanently, and can be used if BC2 has been disconnected from mains after an error has occurred. The VMEM only stores errors that have occurred after BC2 has been connected to the mains.

```
...NVMEM
 1  4F 00000002 10/11/02…
 2  08 16000000  9/11/02…
 3  4F 00000002  8/11/02…
 4  08 16000000  7/11/02…
 5  4F 00000002  7/11/02…
 6  08 16000000  6/11/02…
 7  4F 00000002  5/11/02…
 8  08 16000000  5/11/02…
 9  4F 00000002  4/11/02…
10  .. ........ --/--/--…
11  .. ........ --/--/--…
12  .. ........ --/--/--…
13  .. ........ --/--/--…
14  .. ........ --/--/--…
15  .. ........ --/--/--…
```

Complete Error Line

```
1  4F 00000002 10/11/02-09:35:21
```

Date and time parameter will scroll according to general rules for the error, the cursor points to.

By pressing ⏩ a more detailed view of the corresponding error is shown,

```
...4F 00000002
Date 10/11/02-09:35:21
WATCHDOG RESET
```

Pressing ⏪ returns to Error List

The Error Layout

1	4F	00000002	10/11/02	09:35:21
Err_no,	error_code,	error_parm,	Date,	Time
1-15 dec	0-FF	0-FFFFFFFF	dd/mm/yy	hh:mm:ss
2digit dec	2digit HEX code	8digit HEX code		

error_parm are divided into 4 sections
digit 1 and 2 XX------ error_type
digit 3 and 4 --XX---- error_param1
digit 5 and 6 ----XX-- error_param2
digit 7 and 8 ------XX error_param3

EP1 = error_parm1
EP2 = error_parm2
EP3 = error_parm3
Error_codes are written in **bold** and error_type in underline

The Error LIST

Is a list of all the possible errors in BC2, it's divided into, **error_code** with the sub parameter error_type, error_type which has 3 sub parameter error_param1, error_param2 and error_param3.
When ever a error that can be related to HW, SW or MEK, the cause is described, sometimes there can be more than one cause for the corresponding error, all the possible causes are the listed with the most likely listed first.

Error_ code	Error _type	Error_parm 1-3	Description	Cause (check/replace)
00	.		NO APOS ERROR	No error
08	.		APOS IOP ERROR	uP H8 Module
10	.		ILLEGAL TIMER ID	SW bug, check for AP SW update
11	.		TIMER NOT FREE	SW bug, check for AP SW update
15	.		ILLEGAL DATE VALUE	SW bug, check for AP SW update
16	.		ILLEGAL TIME VALUE	SW bug, check for AP SW update
17	.		ILLEGAL TIMER PARAMETERS	SW bug, check for AP SW update
20	.		ILLEGAL SIMPLE MESSAGE ID	SW bug, check for AP SW update
22	.		OUT OF MESSAGE BUFFERS	SW bug, check for AP SW update
25	.		ILLEGAL REPOSITORY TYPE	SW bug, check for AP SW update
26	.		OUT OF REPOSITORIES	SW bug, check for AP SW update
27	.		REPOSITORY VIRTUAL LIMIT REACHED	SW bug, check for AP SW update
28	.		NULL POINTER DELETE	SW bug, check for AP SW update
29	.		ILLEGAL REPOSITORY ADDR	SW bug, check for AP SW update
2A	.		REPOSITORY IS ALLREADY FREE	SW bug, check for AP SW update
40	.		NON ISR FUNC CALLED FROM ISR	SW bug, check for AP SW update
41	.		PHYSICAL STACK LIMIT REACHED	SW bug, check for AP SW update
42	.		STACK VIRTUAL LIMIT REACHED	SW bug, check for AP SW update
43	.		OUT OF IAS OBJETS	SW bug, check for AP SW update
44	.		IAS SIGNAL LOST	SW bug, check for AP SW update
45	.		OVERFLOW IN IAS FIFO	SW bug, check for AP SW update
47	.		LSL QUEUE NOT ATTACHED	SW bug, check for AP SW update
48	.		SCAN QUEUE NOT ATTACHED	SW bug, check for AP SW update
4A	.		UART 0 QUEUE OT ATTACHED	SW bug, check for AP SW update
4B	.		TIIC QUEUE NOT ATTACHED	SW bug, check for AP SW update
4C	.		RIIC QUEUE NOT ATTACHED	SW bug, check for AP SW update
4D	.		OUT OF POWER DOWN CALLBACK OBJ	SW bug, check for AP SW update
4E	.		POWER DOWN ENTERED WITH TIMER RUNNING	SW bug, check for AP SW update
4F	.		WATCHDOG RESET	Check for others errors in NVMEM
80	.		BAS ERROR	
	00		NO BAS ERROR	No error
	01		IIC BUS ERR	Always IO_ERROR not in BC2
	02	Eeprm addr	EE WR ERR	Always IO_ERROR not in BC2
	03	Eeprm addr	EE RD ERR	Always IO_ERROR not in BC2
	04	Eeprm addr	EE RD FF ERR	Always IO_ERROR not in BC2
	0B	Eeprm addr	EEPROM WRITE OVERFLOW	Always IO_ERROR not in BC2
	0C	Eeprm addr	EEPROM CONTROL INIT FAIL	Always IO_ERROR not in BC2
	0D	Eeprm addr	EEPROM CONTROL CALLOC FAIL	Always IO_ERROR not in BC2
A0	.		IO ERROR	
	00		NO APOS IO ERROR	
	01		IIC1 2 ERROR	
	.	EP 1= 00	NO IIC1 2 ERROR	Use EP2
	.	EP 1 = 01	IIC1 2 ACKNOWLEDGE MISSING	Use EP2
	.	EP 1 = 02	IIC1 2 ARBITRATION LOST	Use EP2
	.	EP 1 = 03	IIC1 2 BUS BUSY	Use EP2
	.	EP 1 = 04	IIC1 2 TIMEOUT	Use EP2
	.	EP 1 = 05	IIC1 2 SLAVE TRANS BUF DIFF	Use EP2
	.	EP 1 = 06	IIC1 2 SLAVE NOT ADRESSED	Use EP2
	.	EP 1 = 07	IIC1 2 SLAVE TRANS BUF ERR	Use EP2

	.	EP 1 = 08	IIC1 2 ICB ERROR	Use EP2
	.	EP 2 = D0	CLOCK IIC ADDR	(IC162) Av Panel
	.	EP 2 = 88	A ENG IIC ADDR	(IC300) Analog Sound Engine
	.	EP 2 = 22	ST RDS IIC ADDR	(IC402) Tuner
	.	EP 2 = C6	ST TUNER IIC ADDR	(IC200) Tuner
	.	EP 2 = C4	ST PLL IIC ADDR	(IC200) Tuner
	.	EP 2 = 8C	ST STEREO DECODER IIC ADDR	(IC300) Tuner
	.	EP 2 = 7E	ST LPC IIC ADDR	(IC401) Tuner
	.	EP 2 = A0	ST EEPROM ADDR	(IC203) Tuner
	.	EP 3 = 00	IIC1 BUS ID	IIC bus no. for e.g. measurements
	.	EP 3 = 01	IIC2 BUS ID	IIC bus no. for e.g. measurements
	02	Eeprm addr	EEPROM WRITE ERROR	Default settings or replace EEPROM
	03	Eeprm addr	EEPROM READ ERROR	Default settings or replace EEPROM
	04	Eeprm addr	EEPROM READ ERROR ONLY FF	Default settings or replace EEPROM
	0B	Eeprm addr	EE WRITE OVERFLOW	Default settings or replace EEPROM
	0C	Eeprm addr	EE CONTROL INIT FAIL	Default settings or replace EEPROM
	0D	Eeprm addr	EE CONTROL CALLOC FAIL	Default settings or replace EEPROM
	20		MLSL STATUS ERROR	
	.	EP 1 = 20	CONFIG IMPOSS	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 10	LINK TIED UP	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 08	LINK TIED DOWN	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 04	LINK OK	No error
	.	EP 1 = 02	ML CURRENT MASTER	No error
	.	EP 1 = 22	CONFIG IMPOSS CURRENT MASTER	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 12	LINK TIED UP CURRENT MASTER	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 02	LINK TIED DOWN CURRENT MASTER	ML installation, Analog Sound Engine, or Av Panel
	.	EP 1 = 06	LINK OK AND CURRENT MASTER	No error
	21		MLSL TIMEOUT ERROR	No error
	22		MLSL TX BUF FULL TLG NOT SEND	No error
	23		ML KEY LOST KEY REPAIRED	No error
	24		EXTERNAL COMMUNICATION NOT ALLOWED IN PREPROJECT	No error
	25		LSL FORMAT ERROR	
	.	EP 1 = 00	LSL1 ERROR ID	Defect Scart or CTRL. Connection, or (IC300) Av Panel
	27		LSL TX IMPOSS	
	.	EP 1 = 00	LSL1 ERROR ID	Defect Scart or CTRL. Connection, or (IC300) Av Panel
	28		LSL LINK TIED UP	
	.	EP 1 = 00	LSL1 ERROR ID	Defect Scart or CTRL. Connection, or (IC300) Av Panel
	29		LSL LINK TIED DOWN	
	.	EP 1 = 00	LSL1 ERROR ID	Defect Scart or CTRL. Connection, or (IC300) Av Panel
	2A		GENERIC ICB ERROR	uP H8 Module
	2B		ICB L7 TIMEOUT	ML installation, Analog Sound Engine, Av Panel, or uP H8 Module
	2C		ICB L7 ILLEGAL TIMEOUT	uP H8 Module
	2D		ICB L7 OUT OF REPOSITORIES	uP H8 Module
	2E		ICB L7 ILLEGAL L7 ACK	uP H8 Module
	2F		ICB L7 AKNOWLADGE UNEXPECTED	uP H8 Module
	30		ICB L7 READ RESPONSE UNEXPECTED	uP H8 Module
	31		ICB L7 ILLEGAL RESOURCE TYPE	uP H8 Module
	32		ICB L7 RESOURCE STILL RUNNING	uP H8 Module
	33		ICB L7 RESOURCE ALLREADY FREE	uP H8 Module

	34		ICB L7 ILLEGAL IOP SERVICE	uP H8 Module
	35		ICB L7 ILLEGAL IOP OBJECT	uP H8 Module
	36		ICB L7 TELEGRAM FLUSHED	uP H8 Module
	37		ICB L7 RESOURCE DISABLED	uP H8 Module
	38		ICB L7 HW CLOCK ILLEGAL COMMAND	uP H8 Module
	39		ICB L7 HW CLOCK ILLEGAL EVENT	uP H8 Module
	3A		ICB L2 RETRANS LIMIT REACHED	uP H8 Module
	3B		IIC COMPONENT DISABLED	uP H8 Module
	3C		POWER DOWN OF IOP IMPOSSIBLE	uP H8 Module
	3D		CSD BUS DISABLED	SW bug, check for AP SW update
	3F		ATI OVERRUN ERROR	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	40		ATI NACK	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	41		ATI NACK NO BUF	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	42		ATI NACK BAD SEQ	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	43		ATI NACK OVERRUN	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	44		ATI UNKNOWN PROTOCOL	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	45		ATI TIMEOUT NO RESPONSE	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	46		ATI DRIVER DISABLED	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	47		ATI UART DONT EXIST	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	48		ATI BREAK SYNC ABORTED	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)

	49		ATI NO TX ALLOWED	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
	4A		ATI TLG WAS BREAK SYNCHED	
	.	EP 1 = 00		Av Panel or Connection between Socket Unit and Test equipment
	.	EP 1 = 01		Av Panel, Top Interface, or interface cable (connection or cable)
F8	.		APPLICATION ERROR	
	00		NO APPLICATION ERROR	No error
	01		ILLEGAL TOP FEP TELEGRAM	SW bug, check for Master Unit/AP SW update
	02		INVALID KEY EVENT	SW bug, check for Master Unit SW update
	10		POWER FAIL 50MS	Power disconnected while BC2 not in stanby, or SMPS
	11		POWER FAIL 100MS	Power disconnected while BC2 not in stanby, or SMPS
	20		TRANSMISSION BUFFER TIMEOUT	SW bug, check for Master Unit SW update
	21		ILLEGAL PORT VALUE	Test equipment used wrong port value
	30		TUNER ERROR	
	.	EP 1 = 02	RDS COMPONENT	(IC402) Tuner
	.	EP 1 = 03	TUNER COMPONENT	(IC200) Tuner
	.	EP 1 = 04	PLL COMPONENT	(IC200) Tuner
	.	EP 1 = 05	STEREO DECODER COMPONENT	(IC300) Tuner
	.	EP 1 = 06	LPC COMPONENT	(IC401) Tuner
	.	EP 1 = 07	ST EEPROM COMPONENT	(IC203) Tuner
	.	EP 2 = 00	NO ST ERROR	Use EP1
	.	EP 2 = 01	ST WRITE ERROR	Use EP1
	.	EP 2 = 02	ST READ ERROR	Use EP1
	.	EP 2 = 03	ST CHKSUM ERROR	Use EP1
	.	EP 2 = 04	ST READ ERROR ONLY FF	Use EP1
	.	EP 2 = 05	ST BLOCK LIMIT	Use EP1
	.	EP 2 = 06	ST EEPROM INVALID BLOCK	Use EP1
	40		RMP STATUS ERROR	
	.	EP 1+2 = 0001	RMP START UP MEDIA	Use EP3
	.	EP 3 = 01	RMP NO DISC	No error
	.	EP 3 = 02	RMP INVALID MEDIA TYPE	No error
	.	EP 3 = 03	RMP SUBCODE ERROR	No error
	.	EP 3 = 04	RMP START UP TIMEOUT	DVDM, SW bug check for Master Unit SW update
	.	EP 3 = 05	RMP TOC ERROR	No error
	.	EP 3 = 1E	RMP DOORS NOT CLOSED	SW bug, check for AP SW update
	.	EP 3 = 20	RMP DRIVER NOT STARTED	SW bug, check for Master Unit SW update
	.	EP 1+2 = 0002	RMP GOTO TRACK	Use EP3
	.	EP 3 = 06	RMP INVALID TRACK NO	No error
	.	EP 3 = 07	RMP TRACK NOT FOUND TIMEOUT	DVDM, SW bug check for Master Unit SW update
	.	EP 1+2 = 0003	RMP STOP	Use EP3
	.	EP 3 = 08	RMP STOP TIMEOUT	No error
	.	EP 1+2 = 0004	RMP PAUSE	Use EP3
	.	EP 3 = 09	RMP PAUSE TIMEOUT	No error
	.	EP 1+2 = 0005	RMP PAUSE RELEASE	Use EP3
	.	EP 3 = 0A	RMP PAUSE RELEASE TIMEOUT	No error
	.	EP 1+2 = 0006	RMP WIND	Use EP3
	.	EP 3 = 0B	RMP WIND TIMEOUT	No error
	.	EP 1+2 = 0007	RMP REWIND	Use EP3

	.	EP 3 = 0C	RMP REWIND TIMEOUT	No error
	.	EP 1+2 = 0008	RMP RESET ALL	Use EP3
	.	EP 3 = 0D	RMP RESET TIMEOUT	No error
	.	EP 1+2 = 0009	RMP MUTE	Use EP3
	.	EP 3 = 0E	RMP MUTE TIMEOUT	No error
	.	EP 1+2 = 000A	RMP DEMUTE	Use EP3
	.	EP 3 = 0F	RMP DEMUTE TIMEOUT	No error
	.	EP 1+2 = 000B	RMP RELEASE WIND REWIND	Use EP3
	.	EP 3 = 10	RMP RELEASE WIND REWIND TIMEOUT	No error
	.	EP 1+2 = 000C	RMP MARK A	Use EP3
	.	EP 3 = 11	RMP MARK A ERROR TIMEOUT	No error
	.	EP 1+2 = 000D	RMP MARK B	Use EP3
	.	EP 3 = 12	RMP MARK B ERROR TIMEOUT	No error
	.	EP 1+2 = 000E	RMP RELEASE AB	Use EP3
	.	EP 3 = 13	RMP AB REPEAT ERROR TIMEOUT	No error
	.	EP 1+2 = 000F	RMP GOTO ABS TIME	No error
	.	EP 1+2 = 0012	RMP FOLDER STEP	Use EP3
	.	EP 3 = 1C	RMP FOLDER STEP TIMEOUT	No error
	.	EP 1+2 = 0023	RMP SHUTDOWN MEDIA	No error
	.	EP 3 = 1D	RMP SHUTDOWN MEDIA TIMEOUT	DVDM, SW bug check for Master Unit SW update
	.	EP 1+2 = 0024	RMP QUEUE NEXT TRACK	No error
	.	EP 3 = 06	RMP INVALID TRACK NO	No error
	.	EP 3 = 07	RMP TRACK NOT FOUND TIMEOUT	DVDM, SW bug check for Master Unit SW update
	.	EP 1+2 = 0105	RMP START DRIVER	Use EP3
	.	EP 3 = 22	RMP START DRIVER TIMEOUT	DVDM
	.	EP 3 = 00	RMP NO RMP ERROR	No error
	.	EP 3 = 17	RMP COMMUNICATION ERROR	SW bug, check for Master Unit/AP SW update
	.	EP 3 = 1E	RMP DOORS NOT CLOSED	Check door and loader mechanics, SW bug check for Master Unit SW update
	.	EP 3 = 20	RMP DRIVER NOT STARTED	SW bug, check for Master Unit/AP SW update
	.	EP 3 = 21	RMP BUSY	No error
	41		RMP TRANSMIT QUEUE FULL	SW bug, check for AP SW update
	42		RMP DD UNKNOWN COMMAND	SW bug, check for Master Unit SW update
	50		OUT OF DISPLAY REPOSITORIES	SW bug, check for AP SW update
	51		DISPLAY REPOSITORY OVERRUN	SW bug, check for AP SW update
	60		CABLE DATA UNSTABIL	Check connection between Socket Unit and Master Unit, AV Panel, Top interface, interface cable.
	61		PING PONG FAILURE	Check connection between Socket Unit and Master Unit, AV Panel, Top interface, interface cable.
	62		TOP RETRANS FAILED	Check connection between Socket Unit and Master Unit, AV Panel, Top interface, interface cable.
	70		DOORS BLOCKED OPENING	Check doors mechanical
	71		DOORS BLOCKED CLOSING	Check doors mechanical
	72		DOORS NOT READY ERROR	Check doors mechanical
	73		SOF DISP EXCEED SOF DISP DD TELEGRAM TYPE	SW bug, check for AP SW update
	74		OUT OF DISP DD TELEGRAMS	SW bug, check for Master Unit SW update
	75		TOP ERROR	
	.	EP 1 = 00	BRC NOT COMPLETED	Check connection between Socket/ Master Unit, AV Panel, Top interface, interface cable
	.	EP 1 = 01	DENIED BRC REQUEST	Check connection between Socket/ Master Unit, AV Panel, Top interface, interface cable

		EP 1 = 02	BRC DENIED	Check connection between Socket/ Master Unit, AV Panel, Top interface, interface cable
		EP 1 = 09	CABLE DATA UNSTABIL	Check connection between Socket/ Master Unit, AV Panel, Top interface, interface cable
		EP 1 = 11	PIO CMD QUEUE FULL	SW bug, check for Master Unit SW update
		EP 1 = 12	ATI CI QUEUE FULL	SW bug, check for Master Unit SW update
		EP 1 = 13	DVD COMM TIMO	DVDM

When leaving the **NVMEM** Error List menu user is prompted to clear the list.

```
...NVMEM
Clear Error List?
Clear   Keep
^-------------
```

Select Clear to permanently delete the list, or Keep to not delete the list.

3. Product ID

```
...Product ID
1  Item No          xxxxxxx
2  Type No       YYYYYYYY
3  Serial No           zzzz
4  PIN                 OK
```

If Error in Master PIN code PIN = Err, else PIN = OK.

4. Service Counters

```
...Service Counters
1  Time Standby      1100
2  Time Radio          10
3  Time CD              5
4  Time DVD            23
5  Time AUX             0
6  Time active ML       2
7  Time TP Enabled      3
8  Times Standby        3
9  Times Booted        23
```

*NOTE: Unit of Time is in *10hours

Time Standby: Time unit is placed in standby x10hours
Time Radio: Time Radio source is active x10hours
Time CD: Time CD source is active x10hours
Time DVD: Time DVD source is active x10hours
Time AUX: Time AUX source is active x10hours
Time active ML: Time source from ML is active x10hours
Time TP Enabled: Time unit has TP enabled x10hours
Times Standby: Times the unit is placed in standby
Times Booted: Times the uP is booted (times disconnected/connected from mains)

5.Default Settings

```
...Default Settings
Set Default Settings?
Yes  No
^------
```

6.Keyboard Test

```
...Keyboard Test

Key: CNTL_STEP_UP_KEY
Data: 0
```

Valid Key Names are

CIFFER_0_KEY	REWIND_KEY
CIFFER_1_KEY	GO_KEY
CIFFER_2_KEY	CNTL_WIND_KEY
CIFFER_3_KEY	CNTL_REWIND_KEY
CIFFER_4_KEY	CNTL_STEP_UP_KEY
CIFFER_5_KEY	CNTL_STEP_DW_KEY
CIFFER_6_KEY	DISC_KEY
CIFFER_7_KEY	RADIO_KEY
CIFFER_8_KEY	MENU_KEY
CIFFER_9_KEY	LOAD_KEY
STEP_UP_KEY	STANDBY_KEY
STEP_DW_KEY	EXIT_KEY
WIND_KEY	VOLUME_KEY

For VOLUME_KEY the Data field is also used.
Data show the last data different from 0 received for a VOLUME_KEY

```
...Keyboard Test

Key: VOLUME_KEY
Data: +4
```

The Data indicate the NOF steps the volume would be regulated during normal operation.

To leave the Keyboard Test press STOP (Beo4).

7. Loader Lock

This menu can lock Unlock the Loader.
When the Loader is Locked the unit will not open loader and clamper, upon a **LOAD** key, used so CD's/DVD's aren't stolen in shops.

```
...Loader Lock
Current Mode: Unlocked
Unlocked  Locked
^---------------
```

*NOTE: Loader Lock is Default Unlocked

8. DVD Service

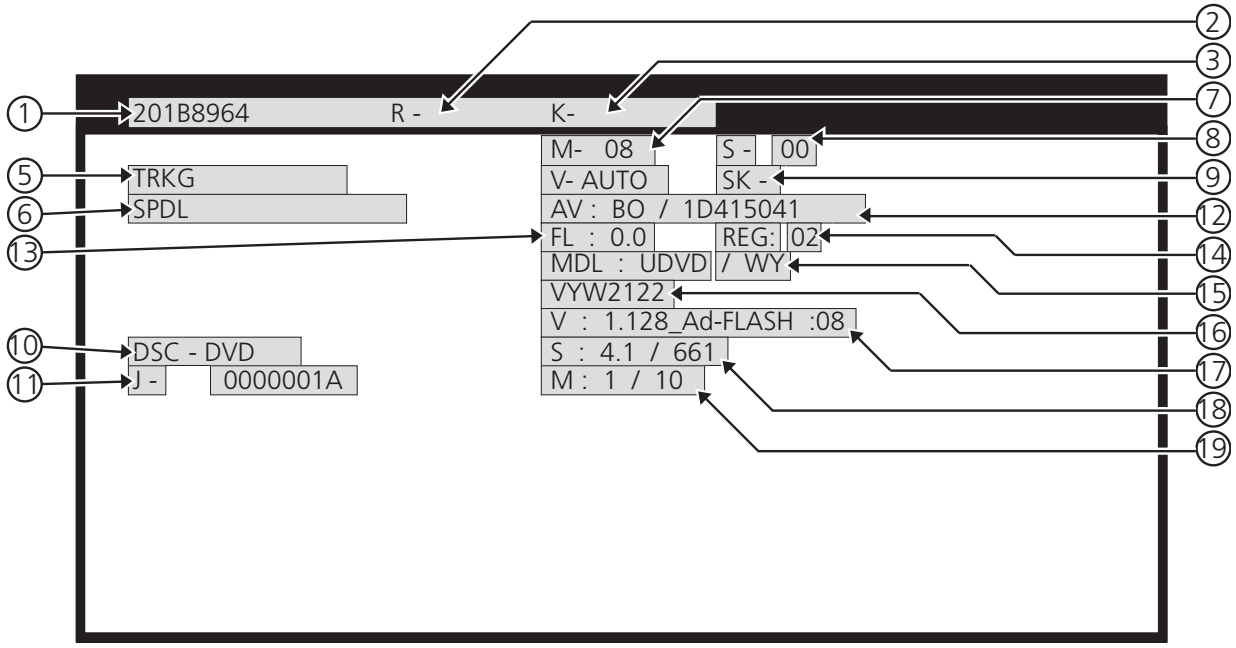
While playing DVD with the BeoCenter 2, you are able to recall a Pioneer service menu, onscreen.

When entering this menu the BEO4 IR codes is send to the MasterUnit which translate this in to Pioneer Test IR codes.

...DVD Service
Enter IR Command

While the DVD is playing, and you are in "DVD service" press "Yellow" and then "Blue" on the BEO4 (remote should be in "CD" mode)

Now a onscreen service menu is displayed (it can be necessary to put the television into format 1 to view the full onscreen menu)



1. Address indication
2. Code indication of remote control unit
3. Main unit keycode indication
5. Tracking status (on/off)
   See the status on the tracking, is the feature on or off.
6. Spindle status (off, a/b, acc/brk, cav, clv)
7. Mechanism (loading) position value
   Unknown : 01 or 41
   Open state : 04
   Close state : 08
   During opening : 12
   During closing : 22
8. Slider position
   If the mechanism has stopped, you are able to see in what position the laser do fail, or in which section the disc is bad.
   CD TOC area : IN
   CD active area : CD
9. Output video system (NTSC, PAL, AUTO)
10. Disc sensing (DVD, CD, VCD)
    This tell you what format the inserted disc is.
11. Jitter value
    This is a statement of the current jitter value, it gives you an instant quality description of the disc, while it plays.
12. Version of the AV-1 chip/version of firmware
    The version of the chip and of the software can be read out here.
13. Version of the FL controller
14. Region setting of the player (1 to 6)
    You are able to see what Region code the Master Unit is locked too, useful when you have changed the socket unit, or are reprogramming the Master Unit to a new country.
15. Destination setting of the FL controller
16. Part number of the flash ROM
17. Version of the Flash ROM (V:)/Flash ROM size (FLSH =)
18. Revision of the system controller
19. Revision of the DVD mechanism controller

Replacement of modules

Master unit

Modules	See page
Keyboard, left	6.1
Keyboard, right	6.2
Display	6.3
Display PCB	6.4
IR receiver one (left)	6.5
IR receiver two (right)	6.6
Clamper	6.7
Clamper cover	6.8

Modules	See page
Gear box	6.9
DVD mechanism	6.10
DVD main board	6.11
Top Interface	6.12
Rubber belt	6.13
Clamper motor	6.14
Gearbox rubber belt	6.15
Gearbox motor	6.16

Socket unit

Modules		See page
PCB50	Analogue Sound engine	6.19
PCB86	Tuner	6.20
PCB60	Switch mode power supply	6.21
PCB6	Microprocessor H8	6.22
PCB1	A/V panel	6.23

Replacing the Main microcomputer PCB6 (uPH8)

When replacing the PCB6 remember to move the EEPROM 6IC6 from the defective PCB6 to the new PCB6, because it contains valuable data (Serial no., PIN-code etc.).

The data is not transferred to the new module until you have been in contact with the theft protection or after 12 hours of connection to the mains. This means that you can try out a new PCB6 without transferring the products serial no. Etc.

Note !

If you have tried a new PCB6 and the serial no. has been transferred to the new PCB6 and it says that the old PCB6 is not defective, the new PCB6 can only be used for this specific product, it must be returned to Bang & Olufsen to be erased again. If the product functions are OK, and the theft protection is also OK. There is no need to testing the functionality of the theft protection.

Replacing of both PCB6 and EEPROM 6IC6

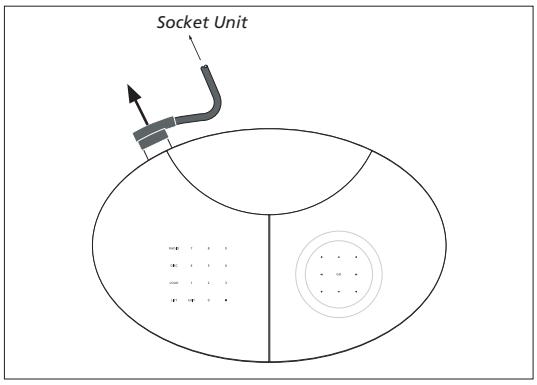
If both PCB6 and the EEPROM 6IC6 need to be replaced it is necessary to have them pre-programmed from Bang & Olufsen with the correct serial no., otherwise they will not work. Please contact Bang & Olufsen.

ServiceTool

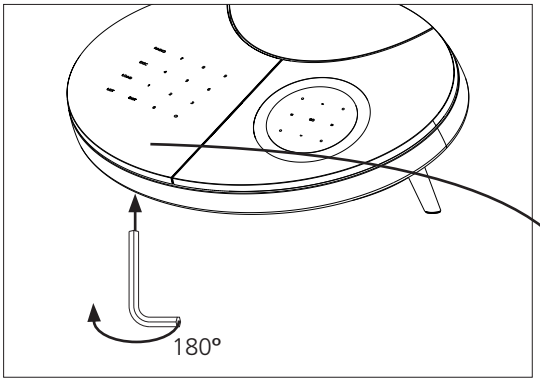
Along with a "cable kit for ServiceTool" (3375397) and "Flash kit for ServiceTool" (3375055) it is possible to flash update the Pioneer FEP software, and the Master Unit FEP software. The original interface cable is connected to the Master Unit, and is going to a service module. From this module a special service cable goes to the Socket Unit. From the service module goes another service cable to a laptop. On the service module, you are able to select which software you want to flash update via a switch. You will need to get the ServiceTool program installed on your lab-top, this can be ordered on CDROM (3658949) or downloaded from the Retail Business System. A fully described instruction is enclosed when the "Flash kit for ServiceTool" is ordered (3375055).

Replace Keyboard left

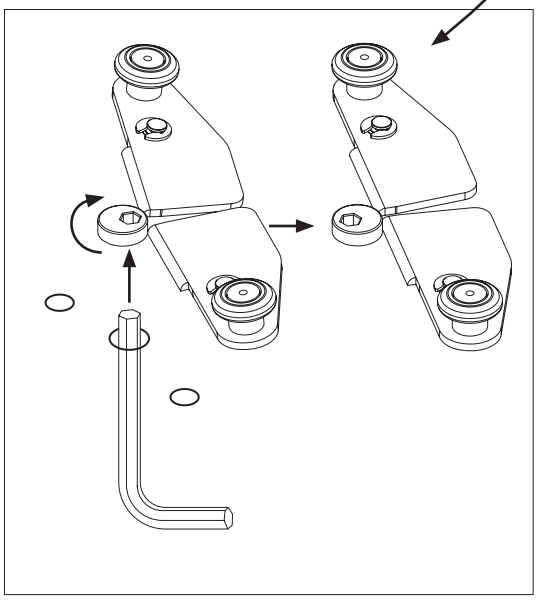
➢1



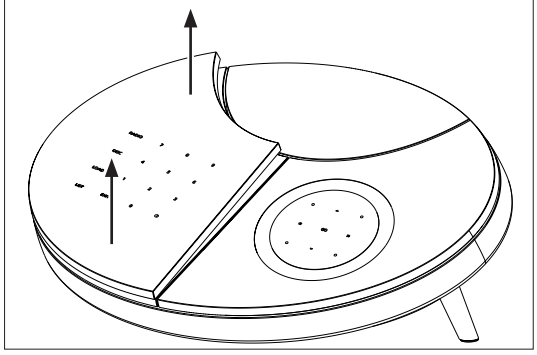
➢2



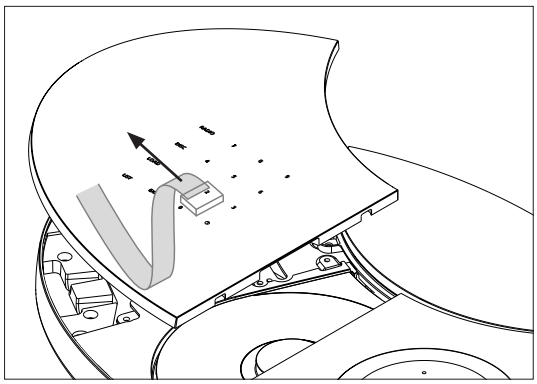
➢3



➢4

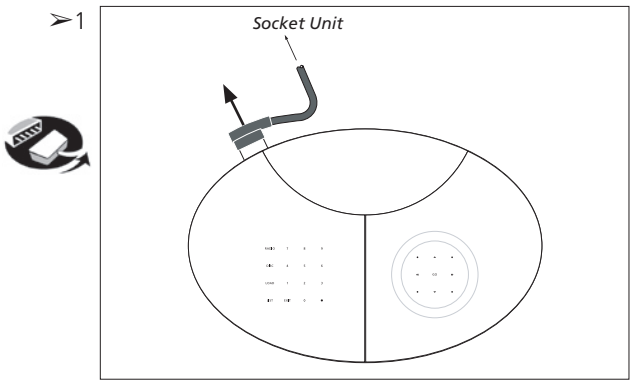


➢5

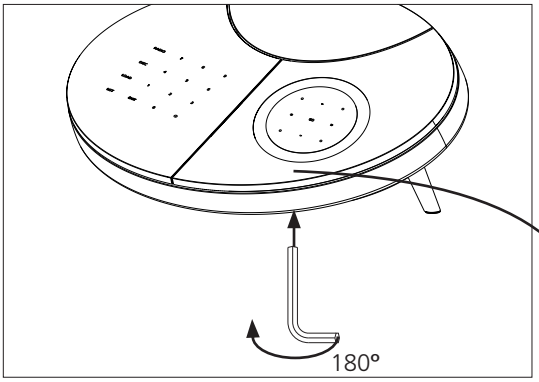


Replace Keyboard right

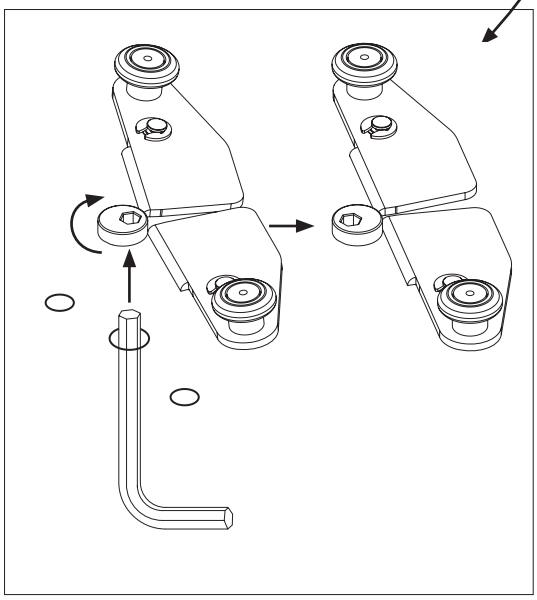
➢1



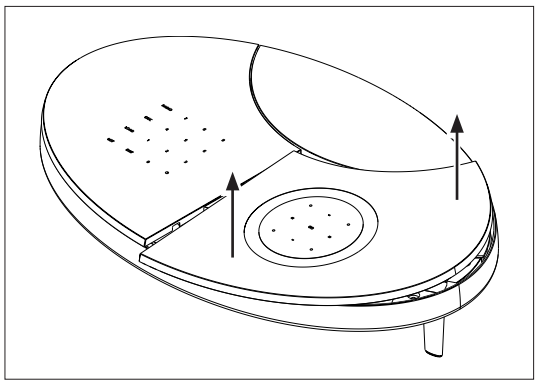
➢2



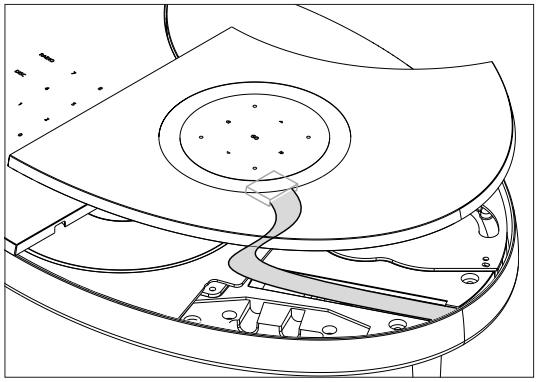
➢3



➢4



➢5



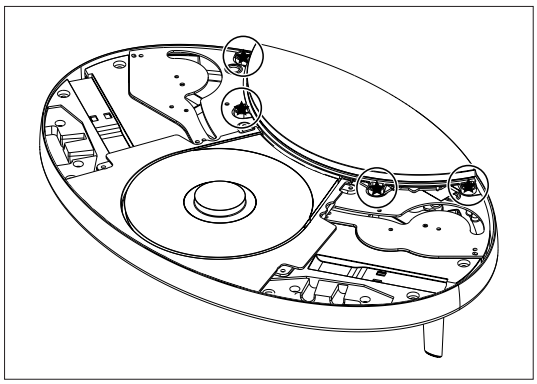
Replace display

See page 6.1, Remove Keyboard left

See page 6.2, Remove Keyboard right

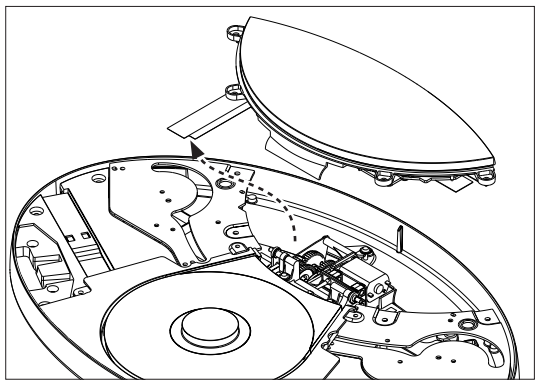
➢1

4x
TX10



➢2

2x

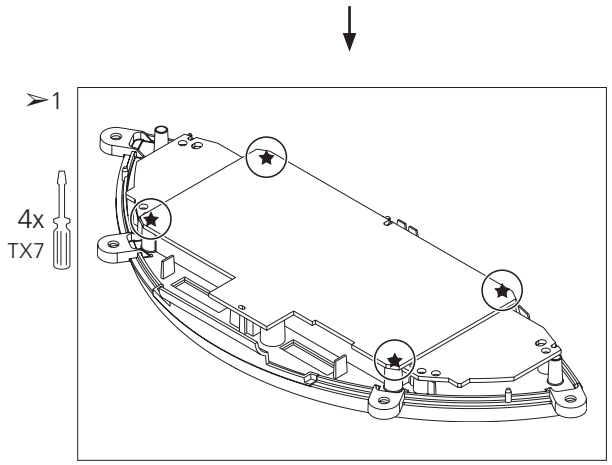


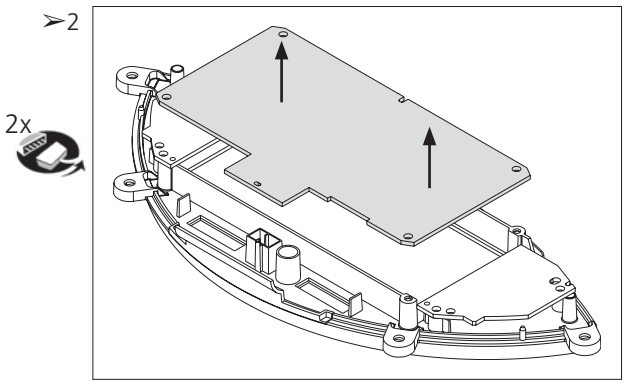
Replace display PCB

See page 6.1, Remove Keyboard left

See page 6.2, Remove Keyboard right

See page 6.3, Remove Display





Replace IR receiver one (left)

See page 6.1, Remove Keyboard left

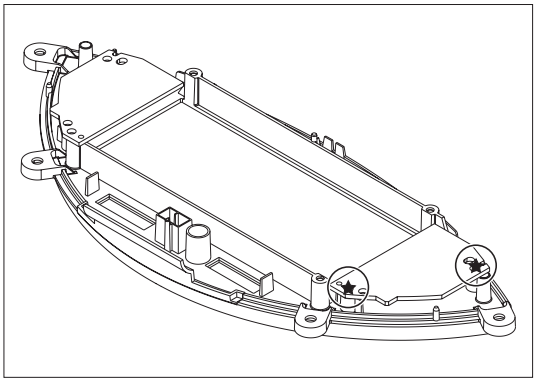
See page 6.2, Remove Keyboard right

See page 6.3, Remove Display

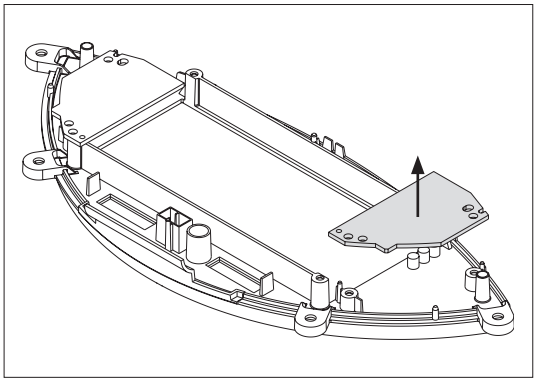
See page 6.4, Remove Display PCB

➢1

2x
TX7

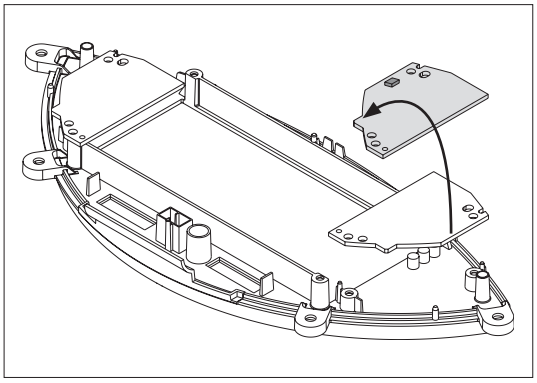


➢2



➢3

1x



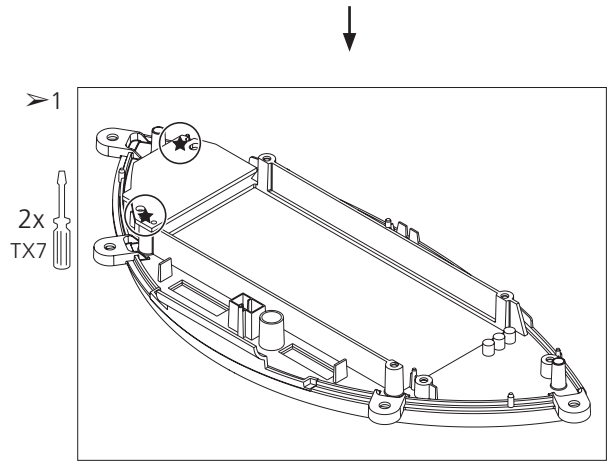
Replace IR receiver two (right)

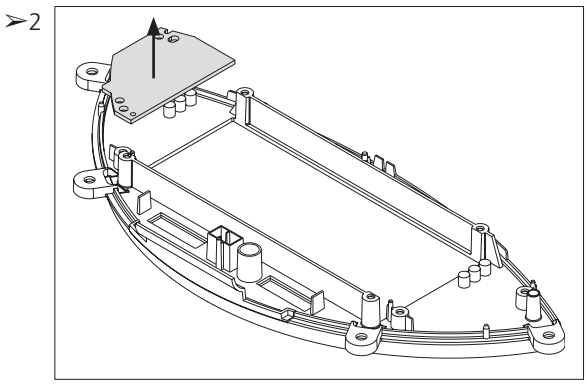
See page 6.1, Remove Keyboard left

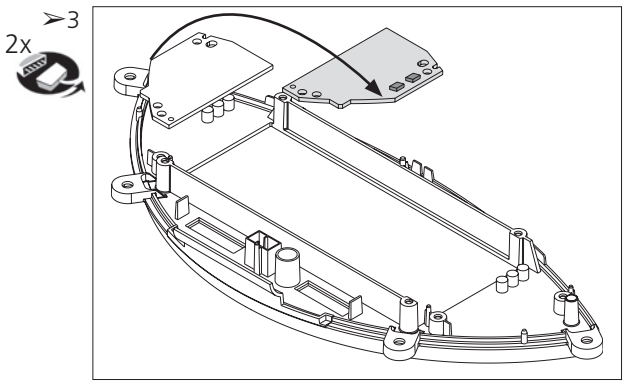
See page 6.2, Remove Keyboard right

See page 6.3, Remove Display

See page 6.6, Remove Display PCB





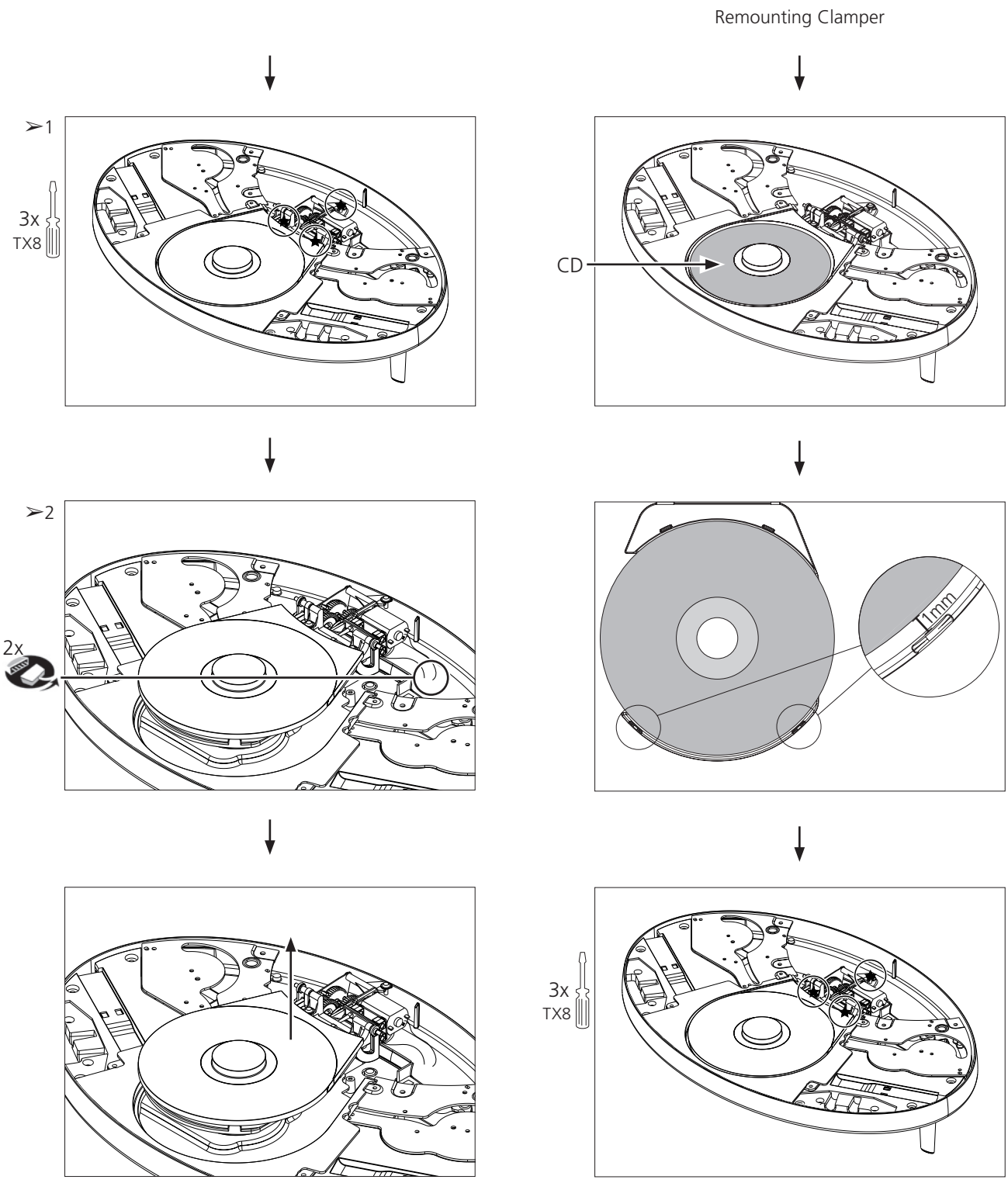


Replace Clamper

See page 6.1, Remove Keyboard left

See page 6.2, Remove Keyboard right

See page 6.3, Remove Display



Replace Clamper cover

See page 6.1, Remove Keyboard left

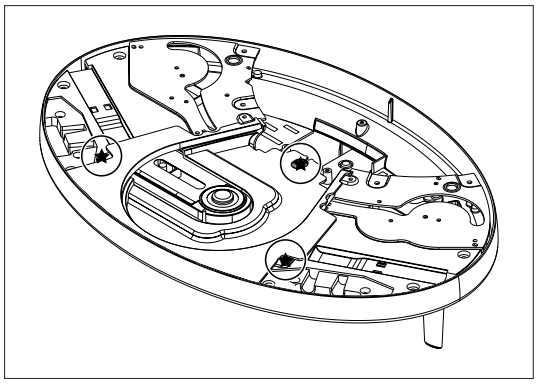
See page 6.2, Remove Keyboard right

See page 6.3, Remove Display

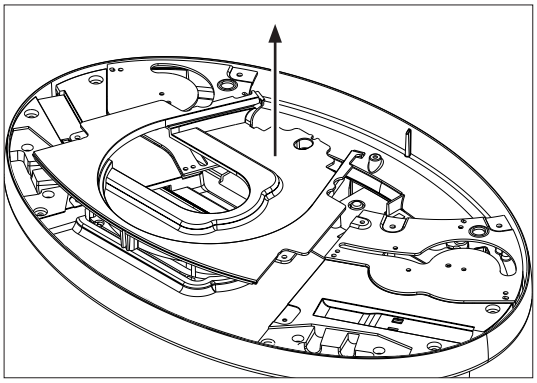
See page 6.7, Remove Clamper

➢1

3x
TX8



➢2



Replace Gear box

See page 6.1, Remove Keyboard left

See page 6.2, Remove Keyboard right

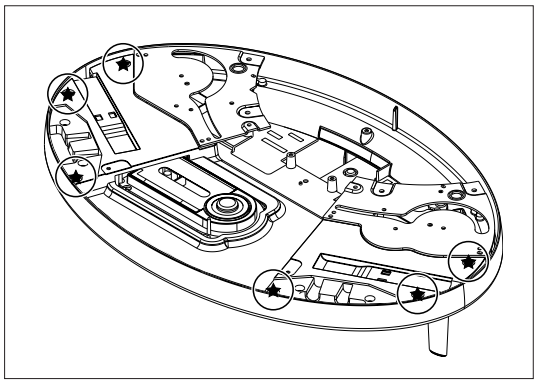
See page 6.3, Remove Display

See page 6.7, Remove Clamper

See page 6.8, Remove Clamper cover

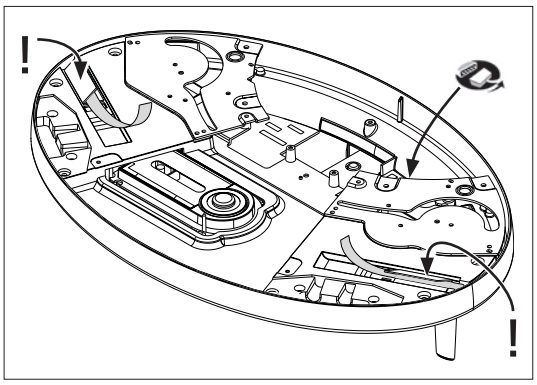
➢1

6x
TX10

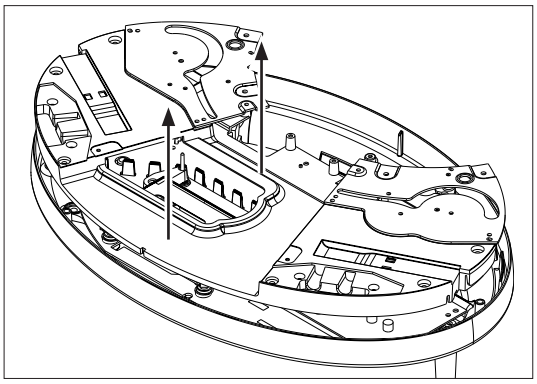


➢2

1x



➢3



Replace DVD mechanism

See page 6.1, Remove Keyboard left

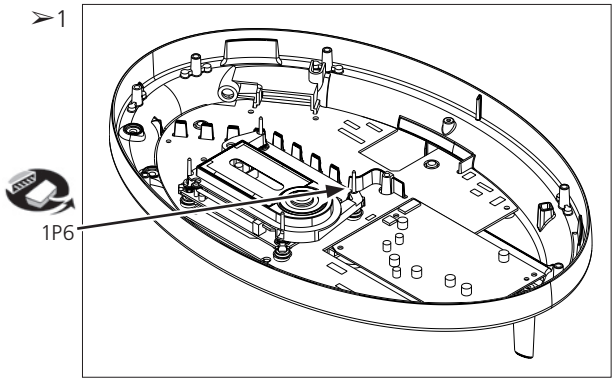
See page 6.2, Remove Keyboard right

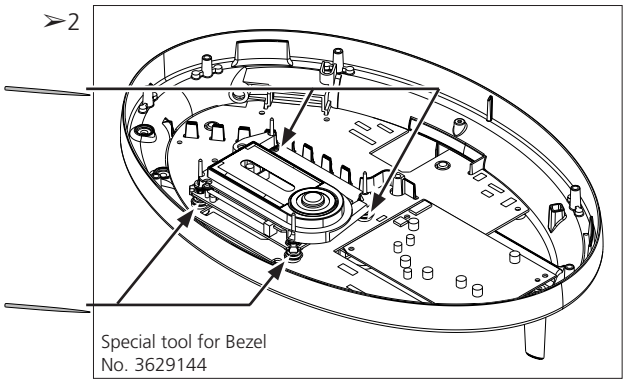
See page 6.3, Remove Display

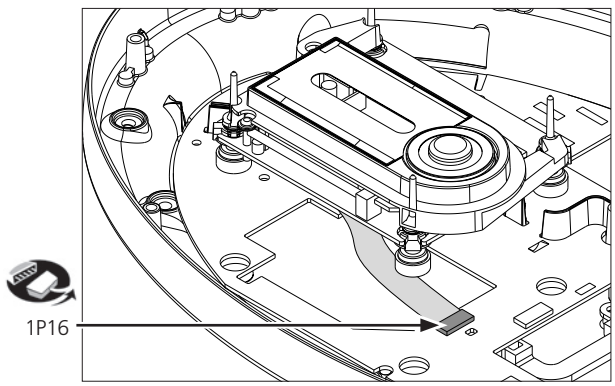
See page 6.7, Remove Clamper

See page 6.8, Remove Clamper cover

See page 6.9, Remove gear box

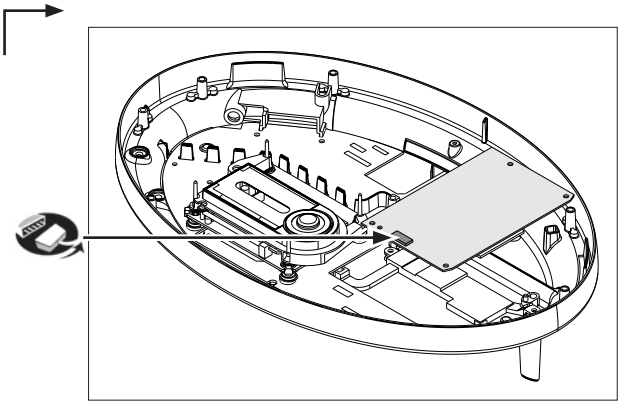


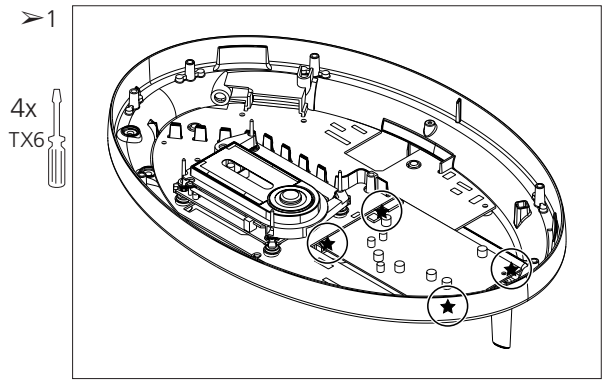


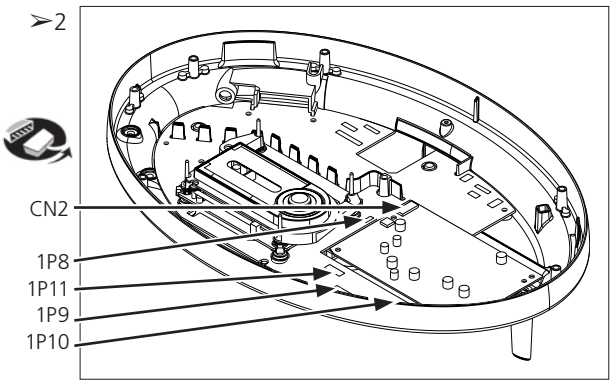


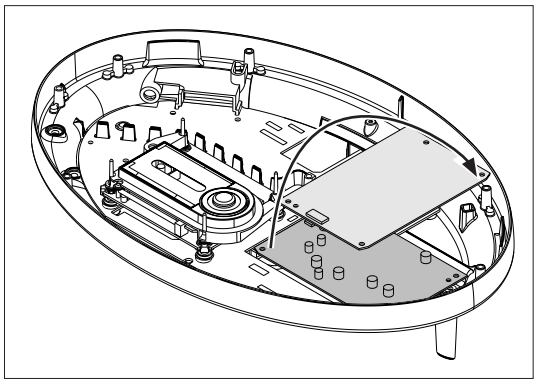
Replace DVD Main board

- See page 6.1, Remove Keyboard left
- See page 6.2, Remove Keyboard right
- See page 6.3, Remove Display
- See page 6.7, Remove Clamper
- See page 6.8, Remove Clamper cover
- See page 6.9, Remove gear box



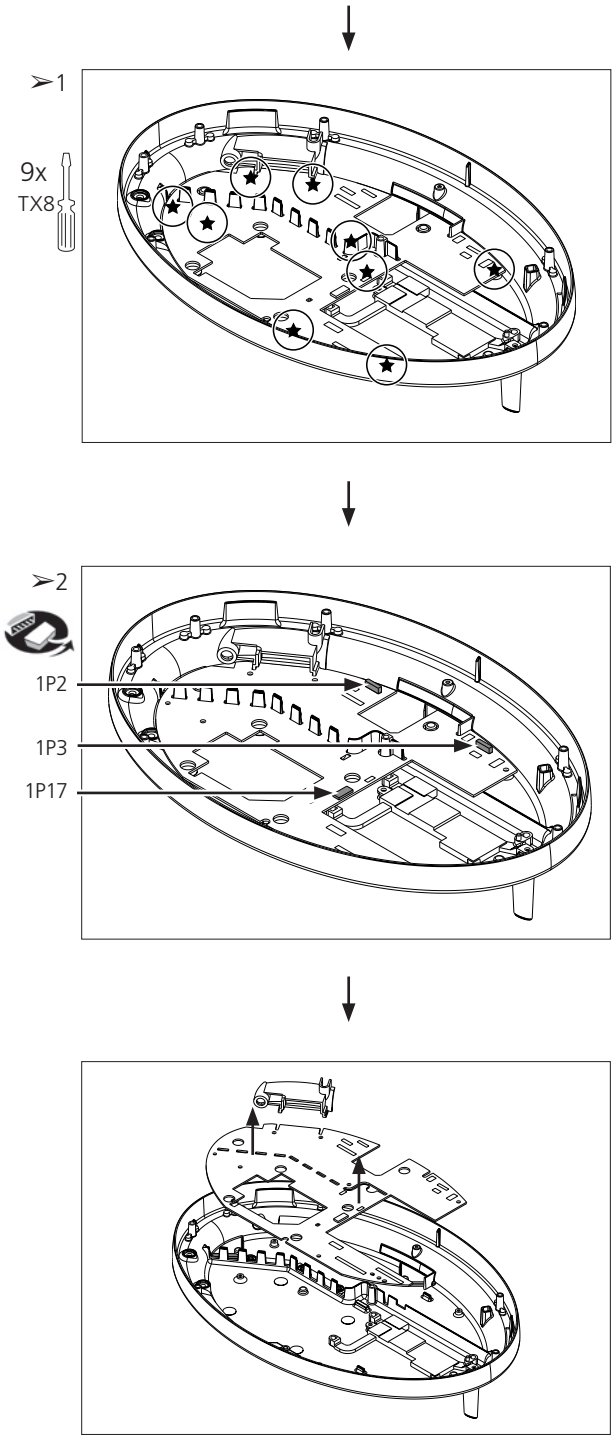






Replace Top Interface

See page 6.1, Remove Keyboard left
See page 6.2, Remove Keyboard right
See page 6.3, Remove Display
See page 6.7, Remove Clamper
See page 6.8, Remove Clamper cover
See page 6.9, Remove gear box
See page 6.10, Remove DVD mechanism
See page 6.11, Remove DVD Main board



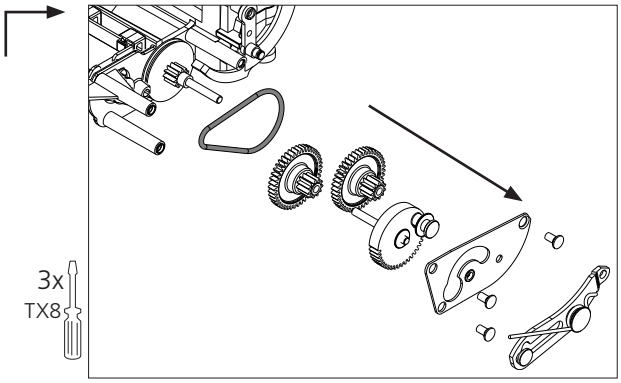
Replace rubber belt

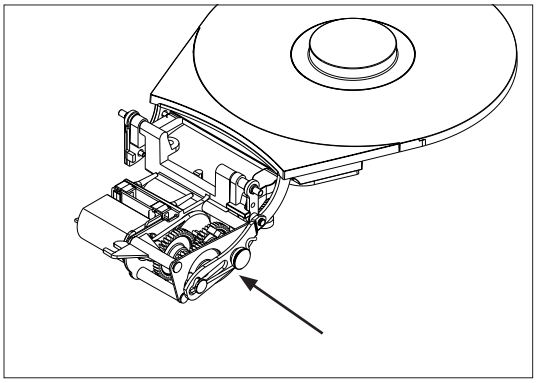
See page 6.1, Remove Keyboard left

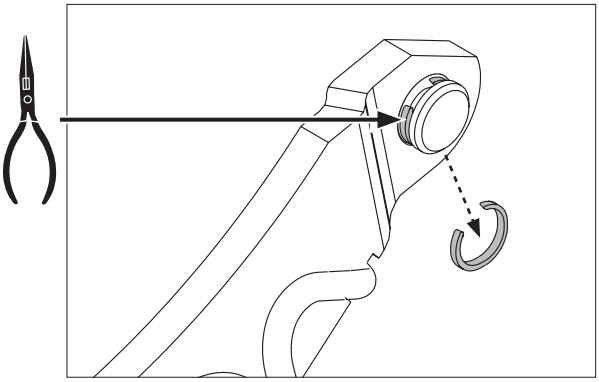
See page 6.2, Remove Keyboard right

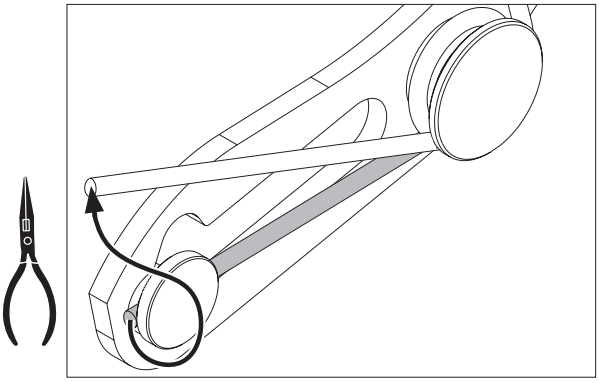
See page 6.3, Remove Display

See page 6.7, Remove Clamper





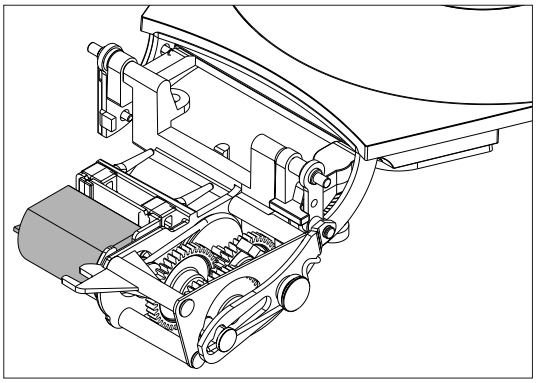


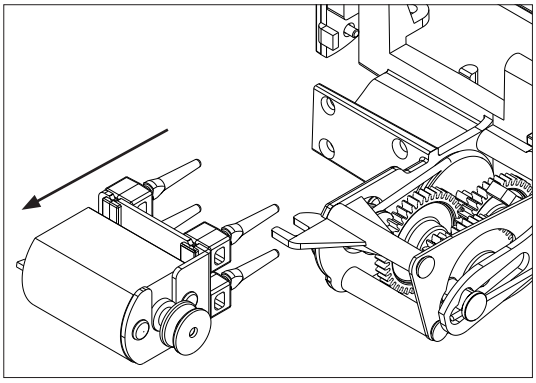


Replace Clamper motor

→ See page 6.1, Remove Keyboard left
→ See page 6.2, Remove Keyboard right
→ See page 6.3, Remove Display
→ See page 6.7, Remove Clamper

↓



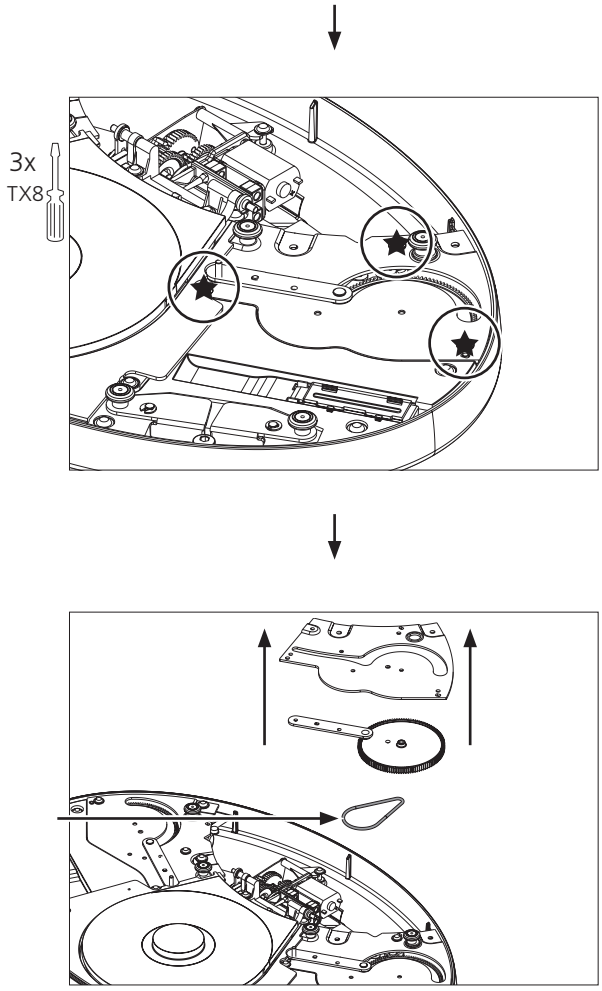


Replace Gearbox rubber belt

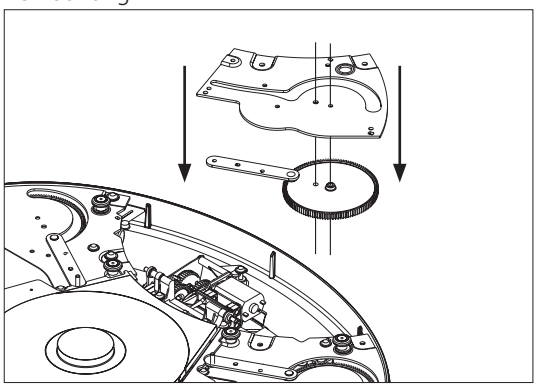
→ See page 6.1, Remove Keyboard left

→ See page 6.2, Remove Keyboard right

→ See page 6.3, Remove Display



Remounting



Replace Gearbox motor

See page 6.1, Remove Keyboard left

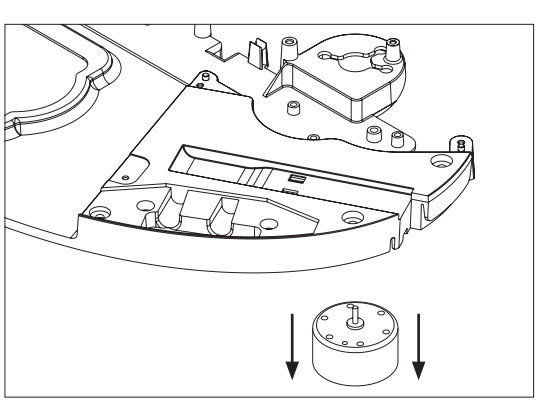
See page 6.2, Remove Keyboard right

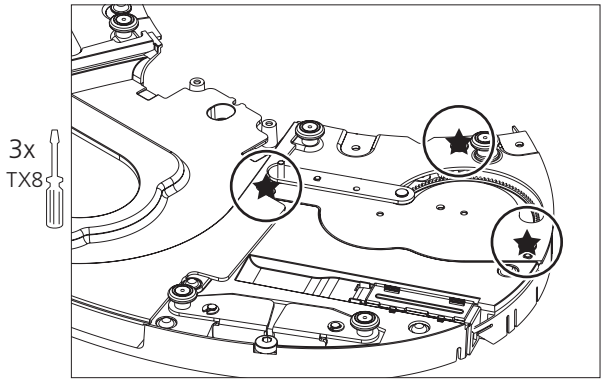
See page 6.3, Remove Display

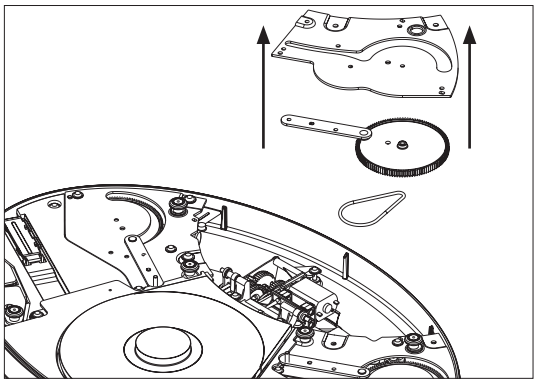
See page 6.7, Remove Clamper

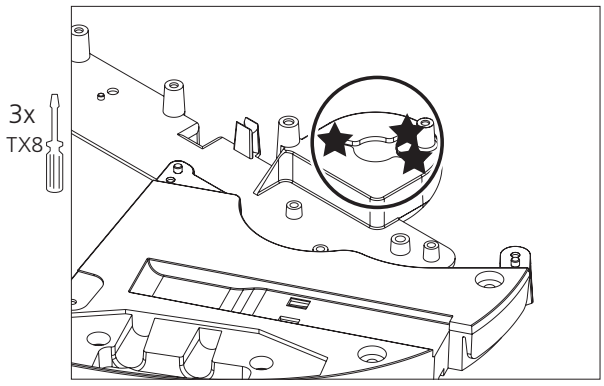
See page 6.8, Remove Clamper cover

See page 6.9, Remove gear box





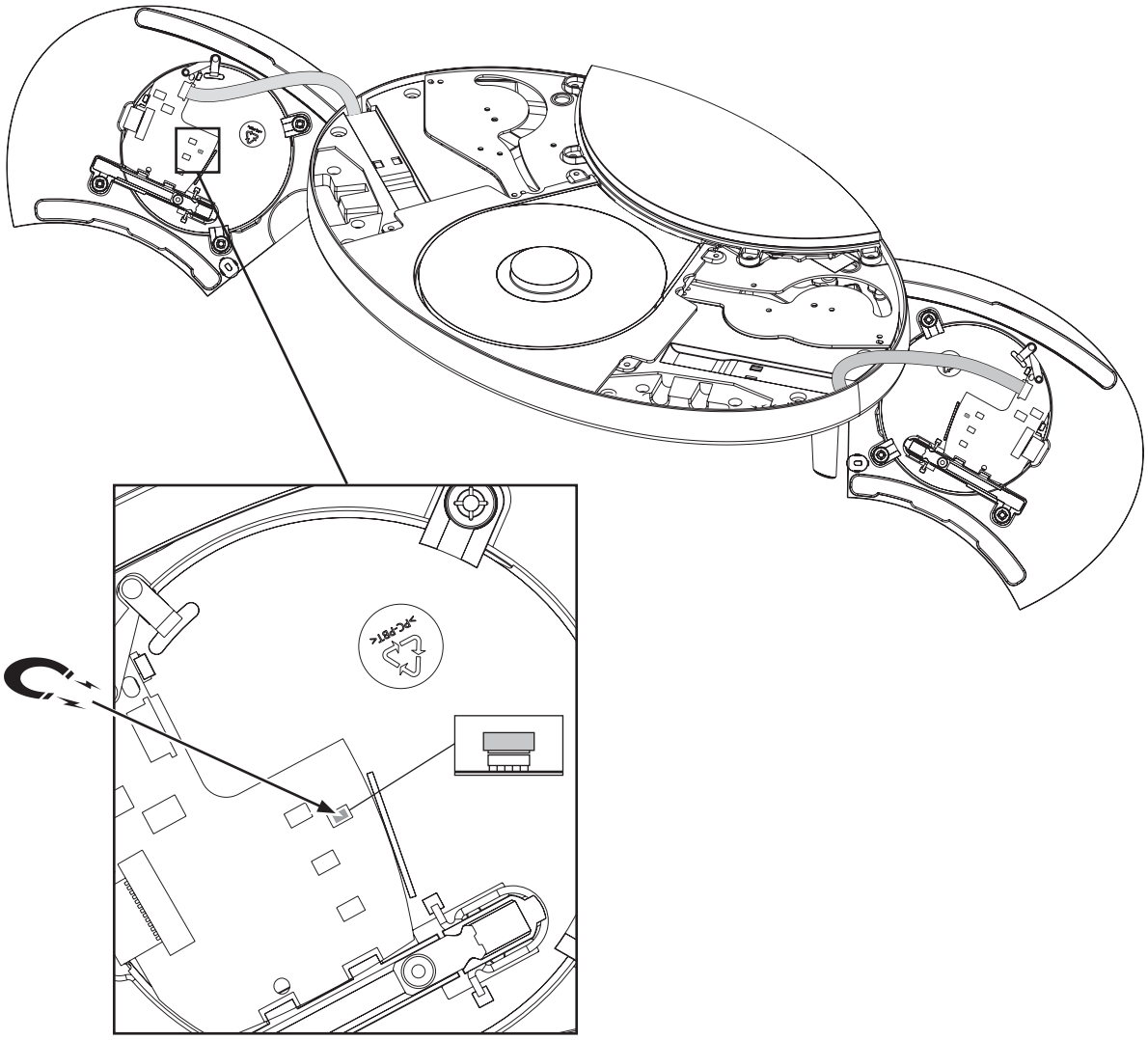




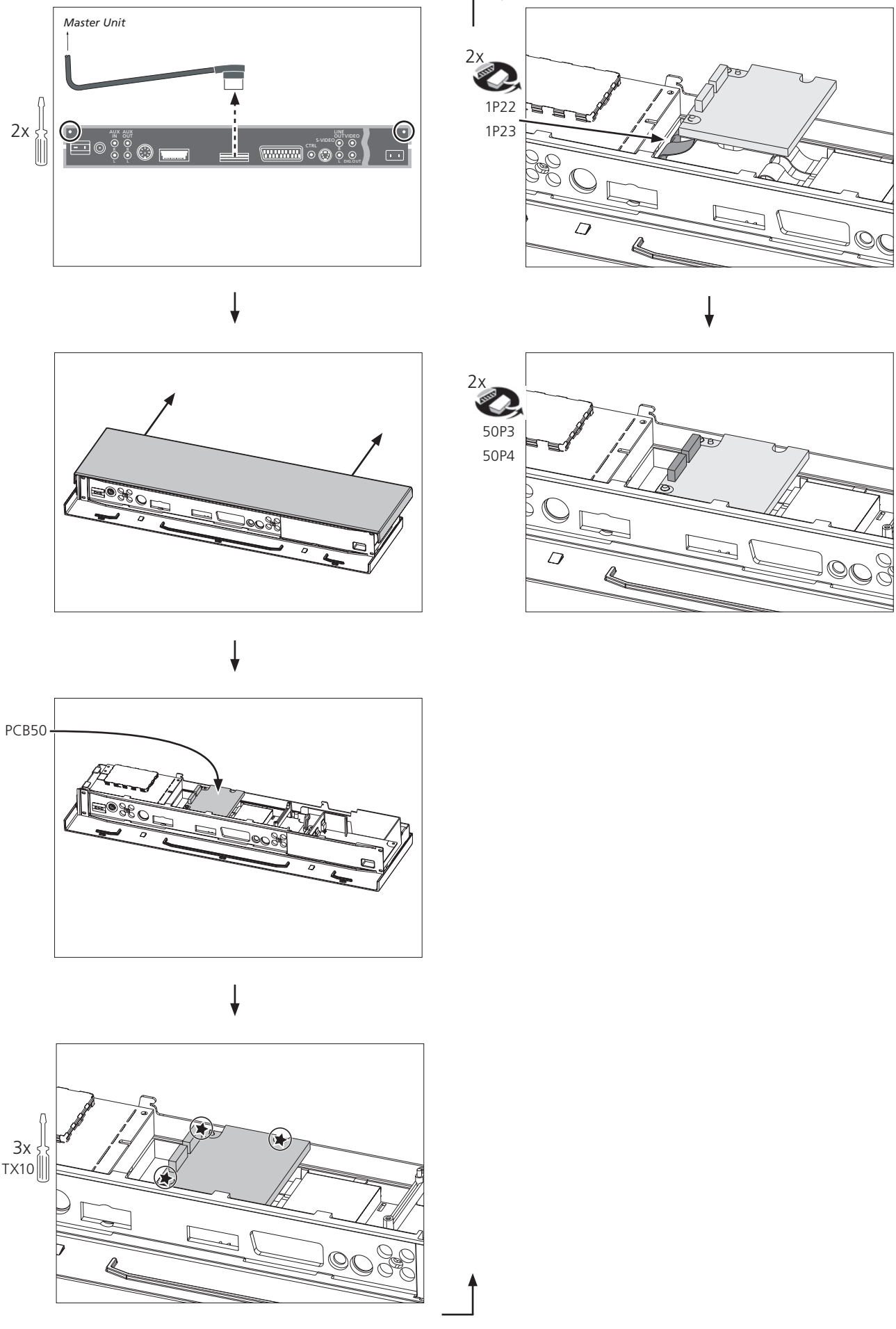
Servicetest position

→ See page 6.1, Remove Keyboard left

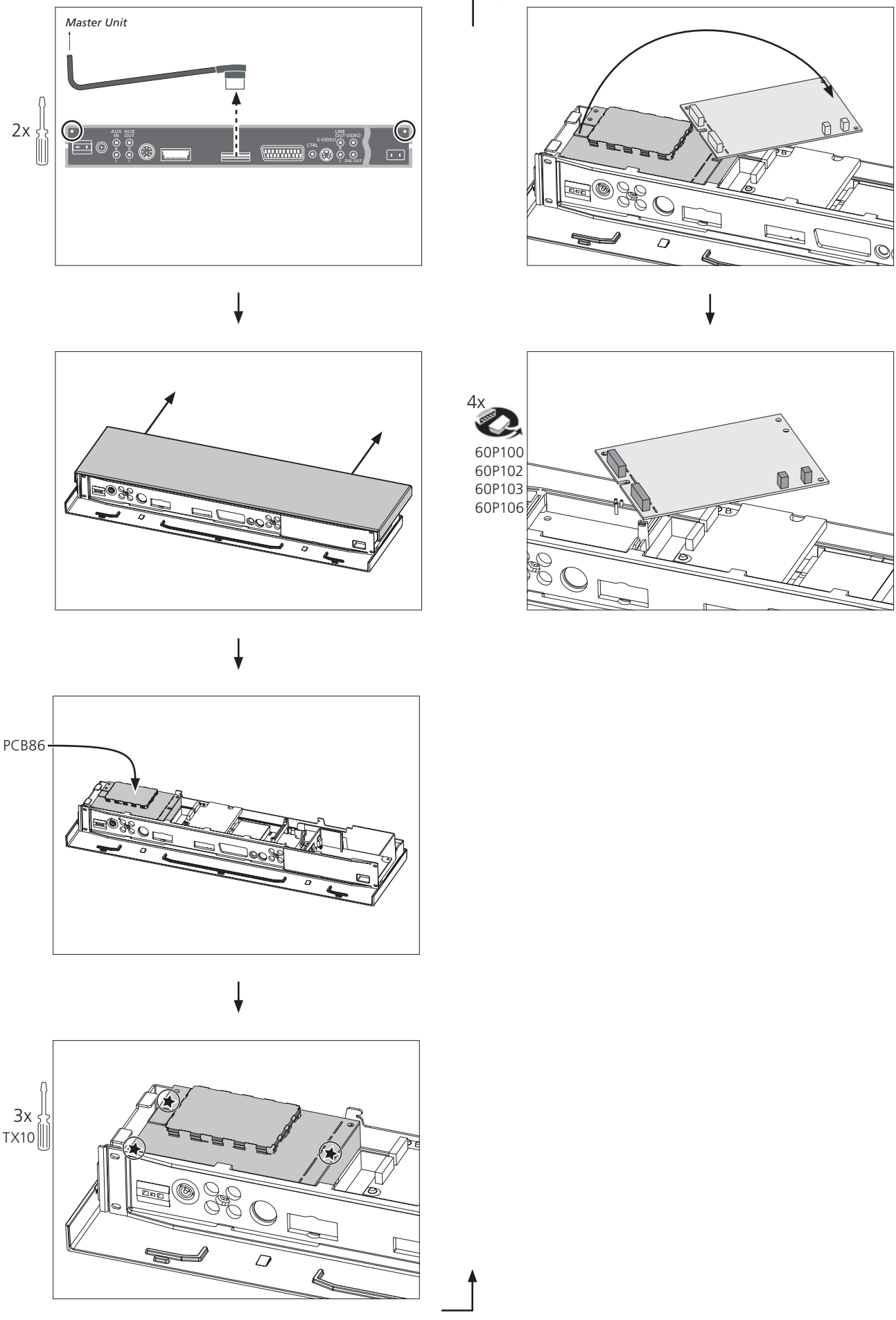
→ See page 6.2, Remove Keyboard right



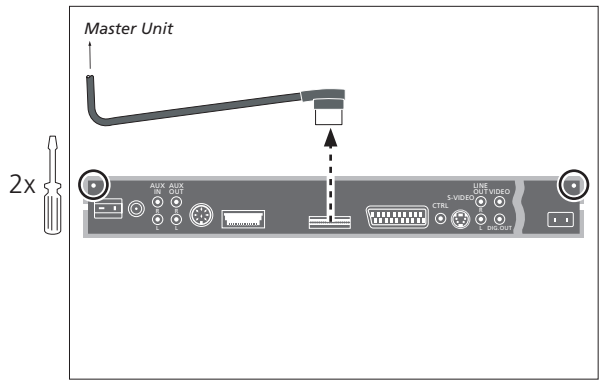
Replace PCB50 - Analog Sound engine

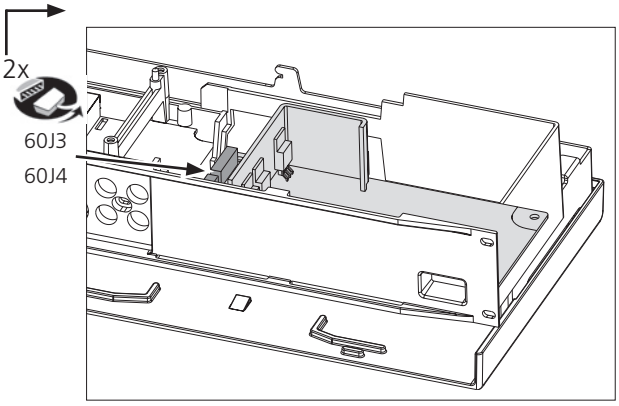


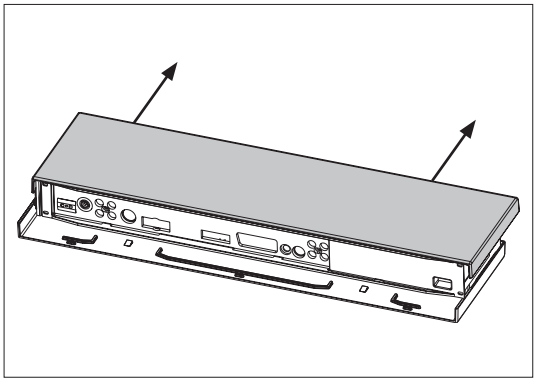
Replace PCB86 - Tuner

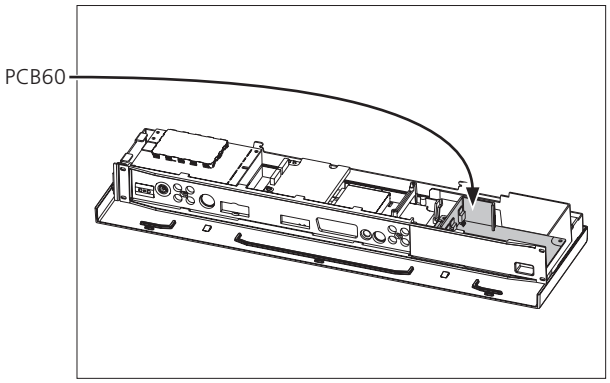


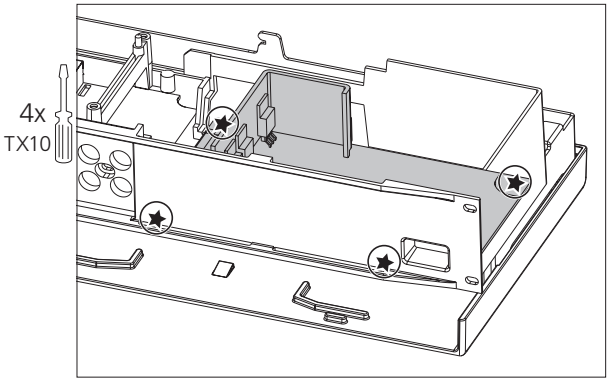
Replace PCB60 - Switch mode power supply



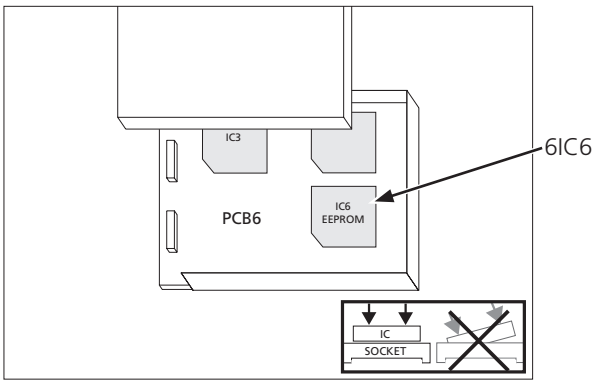






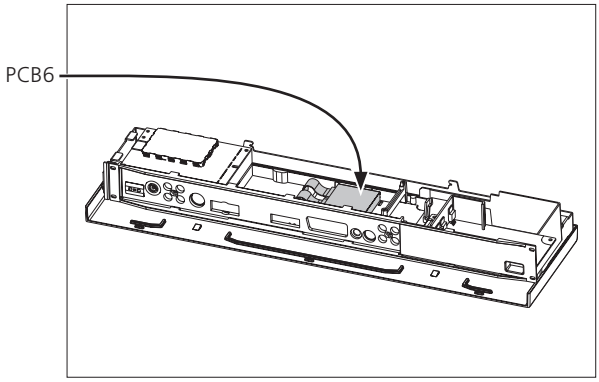


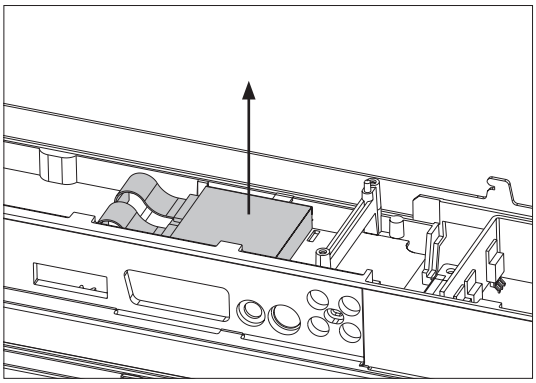
Replace PCB6 - Microprocessor H8

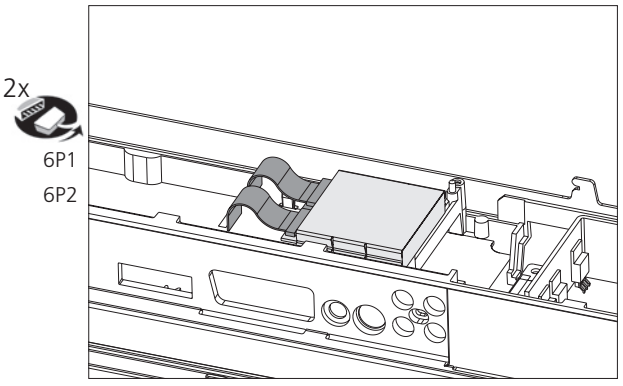


Replace using IC-pliers (part no. 3629145)

See page 6.15, Remove PCB50 Analog Sound engine







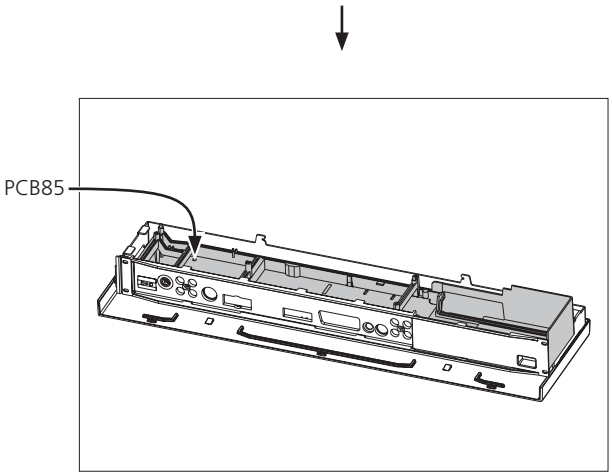
Replace PCB1 - A/V panel

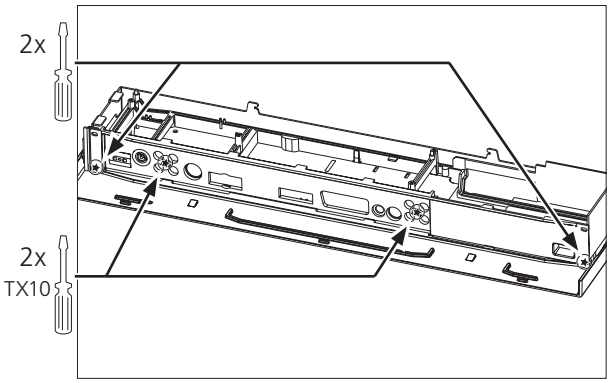
See page 6.15, Remove PCB50 Analog Sound engine

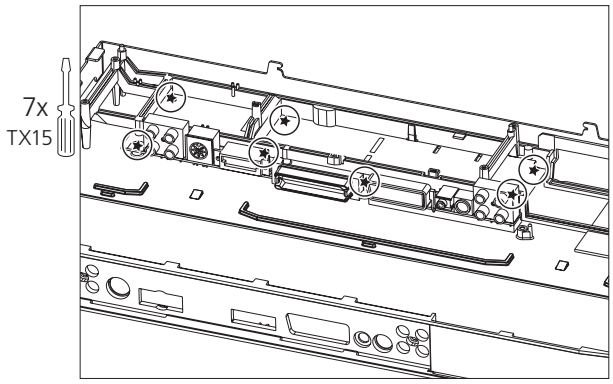
See page 6.16, Remove PCB86 Tuner

See page 6.17, Remove PCB60 Switch mode power supply

See page 6.18, Remove PCB6 Microprocessor H8







Insulation test

Each set must be insulation tested after having been dismantled.
Make the test when the set has been reassembled and is ready to be returned to the customer.
Flashovers must not occur during the testing procedure!
Make the insulation test as follows:
Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal of the insulation tester to the chassis pin of the arial socket.

NOTE!
To avoid damaging the set it is essential that both terminals of the insulation tester have good contact.
Slowly turn the voltage control of the insulation tester until a voltage of 2.5kV and max. 5mA is obtained. Maintain that voltage for one second, then slowly turn it down again.

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